THE NEILGHERRIES;

INCLUDING AN ACCOUNT OF THEIR

Topography, Climate, Soil and Productions;

AND OF THE

EFFECTS OF THE CLIMATE

ON

THE EUROPEAN CONSTITUTION.

BY

R. BAIKIE, ESQ., M. D.

FORMERLY SUPERINTENDING MEDICAL OFFICER ON
THE NEILGHERRIES.

WITH MAPS; A PANORAMIC VIEW OF OOTACAMUND; SKETCHES OF COONOOR, KOTERGHERRY, AND AVALANCHE ; EXTRACTS FROM OTHER WRITERS INCORPORATED; AND STATISTICS TO THE PRESENT TIME;—COLLECTED BY THE EDITOR ON A LATE VISIT.

EDITED BY

W. H. SMOULT, Esq.

AND DEDICATED BY PERMISSION TO

THE RIGHT HONORABLE

GEORGE FRANCIS ROBERT LORD HARRIS,

GOVERNOR OF MADRAS.

SECOND EDITION.

Calcutta:

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1857.

TO

THE RIGHT HONORABLE

GEORGE FRANCIS ROBERT LORD HARRIS,

GOVERNOR OF MADRAS.

My Lord,

In publishing a second edition of Dr. Baikie's account of the Neilgherry Hills, the justly celebrated Sanatarium of the Presidency of Madras, I am highly honored by the permission to dedicate the volume to your Lordship; sensible, as I must be, that the work will derive additional value from the countenance of a Ruler, who has always taken the liveliest interest in promoting the advancement of a region which has bestowed the blessing of health, on numberless climate-stricken servants of the Government so beneficially administered by your Lordship.

I have the honor to be,

My Lord,

With the greatest respect,

Your Lordship's most obedient servant,

W. H. Smoult.

Calcutta, 16th February, 1857.

PREFACE BY THE AUTHOR

TO THE FIRST EDITION.

The object of the Author of the following pages has been, by a simple statement of facts, to attract attention to a circumstance of which, he has reason to believe, a great majority of the Indian public is not aware; namely, the existence of an elevated tract of country, with a climate completely European, situated within the heart of our own dominions in Southern India, and accessible from almost every part of the three presidencies. In pointing out the advantages to be derived from a judicious use of the climate of the Neilgherries,* both in the cure and prevention of Indian diseases, he has taken experience for his guide, resting nothing on theory, and enabling his readers to judge for themselves as to the justice of the conclusions he has drawn.

The author feels assured that he has nothing to fear from the criticism of a candid and enlightened public

* Properly Nilgiris, from the Hindee words Nil, (blue,) and Giri, (a mountain.) The usual effect of the atmosphere being to invest distant hills with a blue tint.

on the facts and opinions he has ventured to submit to them; but he would entreat their indulgence for the many glaring deficiencies which they cannot fail to perceive in the style and arrangement* of this little treatise; deficiencies, which want of leisure, from constant professional occupation, forbids his attempting to supply, even if his inexperience in the art of composition would permit of his doing so with judgment and success.

It only remains for him to offer his acknowledgments to several friends, who have afforded him their invaluable assistance in preparing this work for the press; in particular to W. H. Smoult, Esq, of the Supreme Court of Calcutta, who suggested the plan, and has kindly undertaken to furnish the Maps, Routes, and Drawings, and to superintend the printing and correction; to Baron Hugel, for his valuable paper on the Botanical Physiognomy of the Hills, inserted in the body of the work; and to the Rev. Mr. Schmid, for his copious catalogue of Plants in the Appendix.

Ootacamund, 17th October, 1833.

* The Editor has endeavoured to methodize the arrangement in the present volume.

PREFACE BY THE EDITOR

TO THE FIRST EDITION.

THE conflicting accounts which the Editor received from persons to whom he addressed himself for information, when he was projecting a visit from Madras to the Neilgherries, with respect to the difficulties of the approaches to them, and in regard to the accommodation afforded to visitors, and the number of servants and other necessaries requisite for a temporary residence at Ootacamund, suggested to him the idea of soliciting the author of the following sheets to compile an account of the Hills, and to embody in it statements in reference to the points in question, on the accuracy of which complete reliance might be placed.

That gentleman, he was satisfied, was the person best qualified, both from long experience and from being possessed of every species of information respecting the Hills, to draw up such an account of them as would be practically useful; and he feels assured that the work which, in compliance with his suggestion, has been produced, will not only prove a valuable guide to those who may resort to them in pursuit of health, but will be

perused with interest by the general reader, as it c
veys, in a simple and unpretending style, a faithfu
of the climate, scenery, productions, and capabilities of a
tract of country which is so luxuriant and salubrious,
that it may be justly said to form an Oasis amidst the
arid plains of the peninsula of India.*

W. H. SMOULT.

Calcutta, 1834.

* A copy of the first edition has been presented by the Editor to the Ootacamund subscription Library, for the use of visitors.

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CHAPTER I.

EXPLANATORY INTRODUCTION.

STRANGE as it may appear, the fact is indubitable, that the Indian community, generally, are not aware of the existence of a region within their reach, of easy access, possessing a climate acknowledged, and by meteorological evidence proved to be, the most equable in the world, and fully as bracing and strengthening as that of any part of Great Britain.

Strange, that ignorance of this favored spot should have been so prevalent in any part of India; but still more strange, that many able writers in the service of the Madras and Bombay Governments, should have devoted their labours almost in vain, so far as the public in general is concerned, to describe the character of the Neilgherry Hills, by lucid memoirs and reports; backed as they have been, too, by the anxiety of the Madras Government to promote the advancement of these Hills as a sanatarium, evinced by their publishing those reports: most strange, we repeat, that, with so much to awaken curiosity and excite enquiry, the public, even of Madras and Bombay, have seemingly lost sight of much that has been promulgated, though so palpably conducive to their benefit. Many have visited the spot, but few comparatively are acquainted with the existence of such sources

of information regarding it; and fewer still, of the visitors, have contributed their mite towards bringing to the notice of their fellow-exiles, that there is a pure air and restoring climate at their command, where they themselves have regained all, of which the withering heat and enervating damp of the plains, had combined to rob them.

The Editor has been led to these remarks by the circumstance, that, when on the Hills, he could not discover any of the publications he has alluded to, with exception to a few in the possession of one individual; and to these he will have occasion to refer more particularly hereafter.

To obviate the necessity of notes, and to render the present work more complete, as a guide to the Neilgherries at the present day, the Editor has thought it better, to incorporate all the information he has collected from other sources, as well written, as personally communicated, during his late visit, and to modify Dr. Baikie's remarks, and the observations of other writers, accordingly. This will account for the apparent anachronisms that occur; and which might, otherwise, strike the reader, and those more especially who are familiar with the first edition, as affecting the accuracy of what is stated in this.

The lapse of more than twenty years has worked great changes; but the climate of the Hills remains the same, in all its salubrity.

It was only, as will hereafter appear, in the year 1819 that the Neilgherries were ascended by two members of the Madras Civil Service; who, in the enthusiasm created by the grand discovery they had made, gave to their Government a faithful picture of what they had seen; and, though far less vivid in its coloring than the scene of magnificence which their wondering eyes beheld, little credit was attached to it by the

community. People were taken by surprise. Some entirely disbelieved that such a country and climate could exist within twelve degrees of the equator; others, who understood the principle on which the temperature of elevated regions is regulated, could not conceive how the Neilgherries, so long within the limits of the Company's possessions, should have thitherto escaped notice; and consequently presumed that their elevation was far less than it was described to be; and, but for the two disinterested persons alluded to, these celebrated mountains might have been consigned to the vault of all the Capulets. To show how very easy it is to pass from the sublime to the ridiculous, idle gossip had been busy with the Neilgherries. It was confidently reported, and as eagerly believed by the natives, that there was a race of white giants on the Neilgherries, regular magicians and enchanters, who were governed by the giant Rawun himself; and consequently that it would be prudent to allow the Gogs and Magogs to remain in undisturbed possession of their own cloud-wrapt summits. The reign of prejudice and scepticism, however, gradually gave way to the slow, but sure inductions of reason and the tests of experience; and the communities of Madras and Bombay were at length awakened to a just sense of the blessings, which were in store for them by possessing in their own circle and within the reach of their members, an asylum, to which they might, under almost every form of disease, resort with every probability of advantage, and eventual recovery.

The Rail-road already completed to Arcot, about seventy-one miles of the distance from Madras, and which is in rapid progress of extension towards the opposite coast, with a branch to the foot of the Hills, will, it is expected, be finished in about two years and a half, and will then render the

access to the latter, the easy journey of *a day* instead of a tedious travel of four or five days: and this enables the Editor to dispense with thirty pages of protracted routes given in the first edition; and he has substituted for them full particulars in regard to routes, distances, and stages, as at present existing: the lines of the routes appear in the Map.

But to shew the facilities of the journey, the Editor will simply mention, that he left the Hills, on his return to Calcutta, on the 5th of September last; reached Madras on the 9th; remained there two days; embarked on a steamer, and reached Calcutta on the 16th: again embarked on a steamer, on the 23rd of September; and reached Ootacamund on the 1st of October; having remained two days on the way at Madras. He arrived *within one hour* of the time at which, by the Calcutta Electric Telegraph, he had apprized his friends of his expectation of meeting them, to breakfast, at the Bungalow near the head of the "Seegoor Pass."

In addition to the full information contained in the body of the work, as to the approaches to the Hills, and the accommodation now afforded, by recent improvements both at Ootacamund and Coonoor, and which will shortly be extended to Kotergherry, the Editor submits the following for the particular notice of those contemplating a visit to the Hills from Calcutta.

It may be assumed, that such intending visitors will proceed to Madras in one of the P. and O. Company's steam vessels which make the passage in four days; and it may reasonably be expected, that, in a short time, the voyage will be accomplished in three: the distance being 770 miles, and a rate of 10½ knots per hour being anticipated by the screw steamers. The passage-money for a single person to

Madras, is 160 rupees, and for a native servant 40: and if the passenger returns to Calcutta, within four months, the rates are reduced.

If the steamer anchors off Madras after dark, although the Mussoolah Boats may come off, it will not be safe to land: passengers must be content to remain on board till the boats return at daylight.

Three or four persons with their ordinary baggage, may go in one of these boats: they average about 1½ tons each.

In ordinary weather, the surf wave is not above three feet high; and that zealous Officer, Captain Biden, the Master Attendant, gives all commanders of vessels timely notice, by signal, when caution is necessary. Scarcely an accident has occurred to a passenger boat during many years past.

On landing, numerous palankeen carriages, or "Bandies," as they are called, will be found waiting on the beach, and carts for luggage.

There are three good Family-Hotels, kept by respectable natives on the Mount road, about two miles distant from the Beach; and the Editor can confidently recommend the one called "The Elphinstone Hotel." Those in the town of Madras, are not adapted for families.

The Madras Club is justly considered as the most admirably conducted institution of the kind in India: members of the Bengal Club are considered as members; and gentlemen travellers find no difficulty in being admitted to it benefits, on the introduction of a member.

The shops at Madras are, for all the purposes of preparing to visit the Hills, as well supplied with requisites as any in Calcutta; and investments of European clothing and articles of dress and for household purposes, from London and Paris, are as abundant and varied, as the importations to Calcutta,

in all the requirements as well of ladies as of gentlemen. This renders it unnecessary to load baggage with clothes, beyond what the visitor already possesses, suited to the climate. At Madras, where there are good tailors and dress-makers, a sojourn of two days is sufficient to prepare for the journey.

The respectable firm of Taylor and Co. have Livery Stables, almost as extensive as any in Calcutta; and the hire of carriages of every description, is much more reasonable.

Messrs. Burghall and Co., and others, who are proprietors of the transit carriages (drawn by Horses or Bullocks, as may be desired) will lay the transit from Arcot, on a day's notice; instructions transmitted by the Electric Telegraph to their agents on the line, enabling them to do so without risk of disappointment.

There have been numerous publications descriptive of the Neilgherries, and it is much to be regretted that many of them are now out of print. Several, however, are within reach of enquiry, and some of them are well deserving of perusal; furnishing, as they do, valuable details of the Geological formation of the Hills, their Topography, general statistics, capabilities for agriculture, and great productiveness, with observations on their native inhabitants, and speculations as to their origin; none of which come within the scope of a work professing simply to be a guide. But the Editor has taken the liberty to select from these, and incorporate much of the valuable matter contained in them; and he trusts that by inviting attention to a list, which will be found in the appendix, of all the works that, by the most diligent enquiry, he has been able to trace, he may open a readier access to them than attended his own researches.

Before closing his remarks, the Editor cannot refrain from quoting the recorded sentiments of two eminent personages

who visited the Hills; and the value of whose opinion of their climate and capabilities, is enhanced by the assurance, that it was uttered by men whose minds were free from all bias in regard to them.

The late highly distinguished prelate, Bishop James, in a letter addressed to the Right Hon'ble S. R. Lushington, then Governor of Madras, dated "Ootacamund, Decr. 4th, 1830," says: "The Hills far exceeded anything I had allowed myself to expect. I have been racking my memory for some place to compare them with; *the closest resemblance I can find, is 'Malvern,' at the fairest season: but the extent, and bold variety give these a decided superiority. I have a fuller sense of the enjoyment to be derived from air and exercise than I remember to have ever experienced, at any time, or at any place.* Of the capacity for agricultural improvements which really exist here, no one can doubt."

The Marquis of Dalhousie, when at Ootacamund, in 1855, received a memorial from the residents, soliciting the extension of the Electric Telegraph line to that place; and in his reply, communicated by Mr. Edmonstone, as secretary to the Government of India, he says; "In the three stations of Ootacamund, Coonoor and Kotergherry; there is a large body of permanent residents, and a very numerous assemblage of occasional visitors during a great part of the year. His Lordship *entertains no doubt whatever that the settlements will rapidly increase with increasing facilities of access to them and growing knowledge of the great advantages of their varied and admirable climate.*

"A wing of a European Regiment, also, is stationed close at hand, at Jackatalla; and His Lordship has no doubt that it will become the quarters for a whole Regiment."

"So large a community may, in the opinion of the Governor

General, fairly ask at the hands of the Government the small boon which they now solicit; and his Lordship has great pleasure in giving them assurance that they shall enjoy it."

To the Editor, now, only remains the pleasing duty of doing himself the honor, of respectfully offering his humble and grateful acknowledgments to the Right Hon'ble Lord Canning, Governor General of India, and to the Right Hon'ble Lord Harris, Governor of Madras, for the liberality with which their Lordships have granted to him, the privilege of seeking aid from the Lithographic Departments of Government, at Calcutta and Madras: in the execution of the sketches of the scenery which accompany this volume at the press of the former; and of the Maps which accompany the work, at the latter Presidency.

Lord Harris, on the Editor's waiting upon him at Madras, expressed himself so highly pleased with the panoramic view of Ootacamund which was presented for his Lordship's inspection, that the Editor was encouraged to persevere in the task which he had proposed to himself, of submitting to the Indian community a topographical work with Illustrations of what it described, notwithstanding that the lithographic art was yet in its infancy in this country, where no *tinted* views had hitherto been attempted, nor any of importance even drawn in chalks. His Lordship at the same time granted to the Editor permission to take as many impressions as he desired, from the stone already prepared, of a Map of the Hills, then in progress of execution under his Lordship's directions, in the chief Engineer's Department; after, of course, as many copies had been supplied for the purposes of Government as the service required.

The great interest which his Lordship has always taken in the prosperity of the Neilgherries, and the encouragement

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thus given to the Editor's labours, emboldened him, to solicit the honor of being permitted to dedicate the present volume to his Lordship; and this honor was graciously conceded.

To Colonel Faber, chief Engineer of the Madras army, and to Leiut. P. P. S. O'Connell of his Department, the warmest thanks of the Editor are due, for their cordial co-operation in carrying into effect the orders received from the Government, in regard to the assistance of the Lithographic establishment under their charge.

To Captain Thuillier, Deputy Surveyor General of India, the Editor tenders his best acknowledgments for the facilities afforded him in the execution of the lithographic sketches of the scenery; which, without his assistance and suggestions, coupled with the permission to make use of the lithographic stones in the Department, must have been altogether abandoned.

To his friends Col. Cameron, C. B. commandant of the Neilgherries, of whom the Editor has the pleasure of making further mention in the body of the work; to Captain Francis, of the Madras Engineers; to Dr. Sanderson of Madras; to Dr. Macbeth of H. M. 74th Highlanders; to Dr. John Scott, of Ootacamund; and to Professor Oldham of Calcutta; the Editor has to return his sincere thanks for much valuable aid in personal and written communications, of which he has made use in his compilation.

Mr. Henry Frazer, who, under the directions of the Editor, sketched the original views of the scenery; and transferred them to the stone, is the first artist who has introduced into India the improvement in lithographic drawing produced by *tinting;* and he has exhibited in the execution of his task a degree of skill pronounced by Capt. Thuillier, Capt.

C. Young, and Professor Oldham, themselves accomplished artists, to be highly creditable to his abilities, and unequalled by any known lithographer in this country: and his labours having been thus successful, his talents and industry will, the Editor feels assured, soon lead, as they deserve to lead, to the attainment of the independence which he so well merits. The Editor begs to render his acknowledgments to the above gentlemen, for their kindness in permitting him to enhance the value of the preceding testimony in favor of Mr. Frazer, by the addition of their names.

The thanks of the Editor are also justly due to Mr. H. M. Smith, of the Surveyor General's Department, for his unremitting attentions; and for the pains he has bestowed and the able assistance he has given, as well as for the interest he has taken in superintending the lithographic execution of the drawings.

A preface, however essential to a thorough understanding of the work it precedes, is seldom read, probably not by one in twenty of those who have an interest even in a full comprehension of the latter. Adverting to this, the Editor has forced his, as it were, upon the notice of the reader, by constituting it the leading portal to what lies beyond it. If he has erred, he pleads as his excuse, the earnest desire of extending a great blessing, by a conviction of its existence; and of inducing an acceptance of it, in the assurance of a fulfilment of what it promises.

CHAPTER II.

PRELIMINARY REMARKS

BY THE AUTHOR OF THE ORIGINAL WORK.

On entering upon the perusal of this chapter, the reader is requested to advert to the intimation given in the preceding, of the Editor's intention "to incorporate all the information he has collected during his late visit; and to modify Dr. Baikie's remarks, and the observations of other writers, accordingly." Bearing this in mind, any apparent anachronism will be intelligible, and the worthy Doctor exempted from imputations for which the Editor is responsible; with this caution, he is now introduced, to speak for himself.

—Before proceeding to give a detailed description of the Neilgherries, it will probably be interesting to the general reader, and still more to such invalids as propose paying them a visit for the restoration of their health, to be presented with a condensed view of the principal peculiarities of their climate, situation, &c., which have occasioned their being selected as a place of resort for Europeans.

The Neilgherries, then, are situated in the S. of India, within the Madras Presidency, and between the 11th and 12th degrees of N. latitude and 76th and 77th degrees of E. longitude, on the confines of the Provinces of Coimbatoor and Malabar. They are joined to the table-land of Mysoor by a narrow neck of land, but are completely isolated on every other side, and rise abruptly from the plains to the

height of from 6 to 7,400 feet. (viz. the table-land on the top,) the highest point, Dodabet, being 8,760 feet above the level of the sea. They are about 40 miles distant from the nearest point of the Malabar Coast, and about 230 from the sea on the Coromandel side.

There are four stations at present occupied on the Neilgherries, OOTACAMUND, COONOOR, KOTERGHERRY, and JACKATALLA, the new Station for a Queen's Regiment; of each of which a short description will be given.

It is not easy to describe the climate of the Neilgherries, so as to convey an accurate idea of it to a stranger, as there is no other with which I am acquainted, to which it can be strictly and analogically compared. The cold weather or Winter is like the Spring of the N. of Persia, or the Autumn of the S. of France, and the monsoon is very nearly a mild Autumn in the S. of England. These two divisions include our whole year, and if I were to say that I consider it, all prejudice apart, as equal to any, and superior to most of the climates I have seen in the course of pretty extensive wanderings, I may be suspected of partiality or exaggeration, I shall, therefore, content myself with an appeal to facts, of the accuracy of which any one may satisfy himself by an examination of the Meteorological Tables in the appendix.

It appears from them, that the mean annual temperature of *Ootacamund* is 58°.68, the greatest annual range 39°, the maximum being 77°, and the minimum 38°* the mean annual range is 16°.84, and the mean daily range 17 .01′. The maximum power of the sun's rays is equivalent to 21°.73.†

* This refers merely to the temperature of the *air;* as on or near the ground, water freezes nearly every *night for three months* of the year.

† The Tables in the appendix, distinguished from Dr. Baikie's, will exhibit the observations of others.—ED.

The quantity of rain that fell, on an average of four years in the author's time, was 44.88 inches; the number of days in a year in which there was heavy rain, 19; of showery rain or drizzle, with fair intervals, 81; cloudy, 28; and of days perfectly fair and dry, 238.

The mean temperature of KOTERGHERRY is about 3° higher than that of Ootacamund; that of Coonoor, and Jackatalla probably six degrees warmer: less rain falls at any of these places than at Ootacamund; and it is generally dry at each, when it rains at Ootacamund, from their being affected by different monsoons.

OOTACAMUND is 14½ miles distant from KOTERGHERRY; from COONOOR 10 miles; and from Jackatalla 9 miles.

KOTERGHERRY is about 12 miles from COONOOR; and from Jackatalla 10 miles.

COONOOR is about 2 miles from JACKATALLA, by the carriage road, and 1 mile by the bridle road.

An important feature in every place resorted to by invalids, is its accessibility; we shall therefore state the distances of the Neilgherries from the principal points on this side of India; and give a succinct account of the various Passes or Ghâts, leading to the table-land above; and in a subsequent Chapter we shall give Tables of the several routes, prefixing directions for the guidance of travellers.

The following are the travelling distances from the principal points in the Madras territory:

1. From Madras, viâ Bangalore, 352 miles; of which 71 are now by rail.

2. ————————, viâ Salem, 343 miles; of which 71 are by rail.

3. ————————, viâ Trichinopoly, 384 miles.

4. From Trichinopoly, 159 miles.

5. From Bangalore, 156 miles.

6. From Calicut, 103 miles, viâ "Sispara Pass;" and 156 miles, by the "Goodaloor Pass."

7. From Tellicherry 127 miles; and Cannanore, 141 miles.

The expense of travelling by rail, transit, and dâk, by these different routes, may be stated, on a rough average, as follows:

No. 1 ———	180 rupees, all expenses included.	
No. 2 ———	150.	
No. 3 ———	180 to 200.	No Transit Carriage.
No. 4 ———	80.	Ditto.
No. 5 ———	55.	Transit Carriage.
No. 6 ———	60 to 90.	No Transit Carriage.
No. 7 ———	80 to90.	Ditto.

Passes or Ghauts.

The Neilgherry district communicates with the neighbouring provinces by means of six passes or ghauts,* the roads in which have been cut and kept in repair at the expense of Government; with the exception of one, the "Manaar" or "Soondaputty" ghaut, which has gone out of general use. Two, however, of these passes only, are ascended by wheeled conveyances; the mode of transit on all the others being by palankeens, and ponies. By two, the "Seegoor," by which the Transit carriages from Bangalore, and cart loads of 1,000 lbs. weight, or 2 candies, easily ascend, an additional pair of bullocks being required, to help the carriage or cart over the steepest parts of the ascent; and the "Coonoor" pass, will shortly be thus passable: even now light conveyances may ascend by it.

* The approaches to the Hills have been much altered since Dr. Baikie's time, and the description of them, as now existing, follows.—Ed.

The reader is requested to refer to the Maps, as a guide to elucidate the following description of the Passes, and the approaches to them :

The Seegoor Pass.

This pass, which is the most frequented of all, in consequence of its being practicable for carriages, laden carts and other wheeled conveyances, is carried up the northern face of the Hills, commencing near the village of "Seegoor," about 12 miles from Ootacamund. By this pass the communication is kept up with Bangalore, Madras, and all places to the northward: the Transit carriages, and the chief bulk of European supplies, heavy baggage, horse gram, rice, &c., come to the settlement by it. It also affords the means of transit for the teak timber used on the Hills in the form of rafters, planks, &c.; the road passing near the forests where teak trees are cut, under sanction of Government, about Tippacadoo and Musneumcoil. The trees are felled by Coorumburs and others, and are then, after being lopped and roughly dressed, dragged on rude bandies by buffaloes to the road side, where they are sawn into building pieces, and sent on bullock bandies to the Ootacamund market by this Ghaut.

The Seegoor Pass is the shortest and easiest of ascent. About half of the entire distance is open ground, nearly level, or with a very moderate inclination ; the maximum rise being 1 foot in 9, and this only for a short distance : the greater part is 1 in 10 to 1 in 15 feet, and in may places quite level. It commences near the village of Seegoor and continues for about 8 miles, passing Kilhutty, where there is a good Bungalow : height about 5500 feet, at which travellers should generally rest ; but it is necessary, in order to secure refreshment, to address the proprietor of one of the Hotels, or some friend at

Ootacamund, advising them of the time you expect to reach the Bungalow; this can be done by Electric Telegraph from Bangalore: from the head of the Pass, 7204 feet high, the road continues nearly level for 4 miles to Ootacamund.

All who can ride, as well ladies as gentlemen, should quit their transit carriages at the village of Seegoor, and ride to Ootacamund on horses or ponies. Messrs. J. Wilson and Co., of Ootacamund, will punctually send them, to await arrival at the village, on receiving a Telegraphic message from Bangalore, naming the time of expected arrival there, which should be so arranged if practicable as to reach the village before 11 A. M. as will hereafter be noticed. One pony will take the traveller into Ootacamund.

The scenery is beautiful and picturesque throughout; and a cascade, below the Bungalow, inspires that delight which the fall of rushing waters affords in every part of the world, and to none more than to those who have been long confined to the parched plains of India, and increases the buoyancy of spirit already infused by the ascent itself.

THE COONOOR PASS.

This pass ascends from Meetapollium, in the district of Coimbatoor, through a deep ravine, to Coonoor, on the edge of the table-land above. On leaving Meetapollium, the road passes across a plain, nearly level, for 6 miles; the ascent then commences, and continues for nine miles; the slope averaging about 1 inch in 11; but this will soon be reduced to about 1 in 12 by new levelling. The road is no where less than 15 feet wide, and it is intended that it shall be throughout 20 feet to Coonoor, and Ootacamund, and an improved road is nearly completed; and then it may be expected that transit carriages will be established from Meetapollium.

The scenery throughout this pass is sublime; and the labours of the ascent are not felt, from the exciting contemplation of the ever varying beauties of the surrounding woods and craggs, some rising to the height of 6000 feet; and a stupendous chasm, of equal magnitude, with a cataract rolling down the centre, completes the grandeur of the scene.

There is an excellent Bungalow at Meetapollium, and one at Coonoor.

From Coonoor, the road still ascends, but very gradually, till it reaches Ootacamund, the principal station; the distance being about 10 miles.

THE SISPARA OR KOONDAH PASS.

This magnificent pass forms the line of communication between the western coast, Calicut, &c. and the Neilgherries, across the "Koondah" mountains. Viewing this latter tract as one likely to become, before long, of the greatest value and importance as a producing country, Capt. Ouchterlony, in his admirable Memoir on the Hills, noticed in the appendix, remarks "that he should describe the Sispara pass as one to which the attention of Government should be particularly drawn." It was originally marked out by Lieutenant now Lt.-Col. Le Hardy, of the retired list of officers of the Madras Army, who also marked out and in part completed the "Coonoor" pass, and both do great credit to his skill, perseverance, and ingenuity. The "Sispara" pass commences at "Sholaicul" at the base of the Hills on the Malabar side, where there is a Bungalow, and ascending, through a thickly wooded ravine, a distance of 11½ miles, reaches the summit of the Koondahs; and crossing them, descends upon the table-land of the Neilgherries, and the road reaches Ootacamund, 31½ miles from the head of the Pass. There

is a Bungalow at "Sispara" the head of the Pass, height 6,742 feet—and another called the "Avalanche Bungalow" about half way to Ootacamund, height 6,720 feet. The slope of the Road from thence is so gradual as never to exceed 1⅗ inch in 12, and is in many places level.

From "Sholaicul" to "Arriacode," on the Beypoor river, is 25½ miles, and thence to "Calicut," on the coast, by the river, (here navigable, at all seasons, for large boats) is 35 miles.

When this road is improved, it will doubtless soon become one of the most frequented, especially by travellers from Bombay.

The views in the ascent of this splendid pass are grand in the extreme; particularly from the Sispara Bungalow, and the summit of the Avalanche hill, near the Bungalow. The view from this hill is the *ne plus ultra* of the group. This wild scene is exceedingly striking, and perhaps the most romantic on the Neilgherries, though rivalled by that from "Makoortee Peak," about 11 miles from Ootacamund, where is to be seen the most inconceivably grand mountain scenery in the hills, formed by the termination, north, of the group of the Koondahs.

The Goodaloor Pass.

Commencing at the N. W. angle of the plateau, is that leading from Neddiwuttum, on the Hills, 17 miles from Ootacamund, to Goodaloor at the foot of the pass, which is 5½ miles in length, forming the communication between the Hills and Cannanore, Tellicherry and the western coast towards Bombay, through the Wynaad country, and also with Calicut by the most direct road which exists to that city; descending the Carcoor pass, and passing through Nellumboor, parallel to the

Beypoor river, to Beypoor on the coast. The "Koondah Ghaut," having, however, obtained a preference over this line, for the journey to Calicut, &c. the tappal runners have lately been taken off it, and posted along the other; in consequence of which, the ferries, by which several large streams are crossed, are not now regularly attended; and, through the absence of a constant and sustained traffic along the line, the jungle is encroaching and becoming rank and dangerous. The public bungalows also, along this line, are badly situated as regards health; but this will soon be obviated by the erection of new ones, in open spaces, clear of the encroachments of the jungle, and free from fever. It is much to be regretted that this road should be allowed to fall into disuse, as the line is a most convenient one for reaching the Hills from the coast by Calicut, where all invalids from Bombay now land; and the ghaut, being a short one, and on a very good trace, can be easily and economically kept in repair.

There is another approach to Goodaloor from the Malabar Coast, by Manantoddy and Sultan's battery, which is used; but, until improvements, now in contemplation, are made, will be but little frequented.

A third road strikes in at Goodaloor in Mysore: setting out from Calicut, it passes by Nellumboor, and ascends the Carcoor Pass 12 miles from Goodaloor. This is considered the proper trace for a road to the Water Carriage on the Beypoor river, and the trace has been ordered by Government.

A new approach is projected in this direction, to commence from the nearest point on the Beypoor river where it is navigable, and to ascend to the Wynaad Plateau by the valley of the present Carcoor Pass, and thence, (whilst a direct road will be carried to Uppacadoo, so as to form a communication

for traffic between the Mysore country and Malabar,) a branch will commence to ascend from the neighbourhood of Nadkarry (at the top of the Carcoor Pass) and, passing through the valley under and to the west of the Neilgherry Peak, will reach the summit of the Table-land not far from Neddiwuttum, where a bungalow will be erected; from which place it is intended to follow a more direct route to Ootacamund than the present road of 17 miles, crossing the Pykarra river higher up the stream: the gradients on this road are no where to be steeper than 1 in 25 inches.

The Kotergherry Pass.

In the north-east angle of the plateau of the Hills, at Kotergherry, is another ghaut, communicating with Meetapollium, in the low country, and thence to Coimbatore and the Salem road.

This is the oldest road cut for the ascent of the Neilgherries, at the expense of Government, and it led formerly to the original sanatarium at Dimhutty. It was constructed in a very sound and substantial manner originally; but having been neglected, and suffered to fall into very bad order, it was found necessary in 1845 to give it extensive repair throughout, owing to which it is now in a very practicable state, though too steep for wheeled carriages.

This, and all the other ghauts, could be kept in repair at a very trifling expense, if some person were entertained, whose duty it should be, to go down the entire line once a month with coolies, to see that no drains or channels had got choked; for the interruption of one of these outlets for the heavy falls of rain, which now and then occur, and which might, if remedied in time, be done by one man in an hour, often causes breaches in the road which it takes twenty or

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thirty men to repair. This ghaut is of considerable importance to the eastern part of the Hills, as a great deal of traffic, in the produce of the coffee plantations, and of the Burghers' lands, goes on by it; and large quantities of low country goods are brought up it for sale and barter. It is also favorably situated for gaining the summit of the Hills on the eastern side; as the ascent of a long spur on which the lower part of the road is carried, is commenced almost immediately after quitting Meetapollium, without having to pass through much low jungle.

But, on reference to the description, which follows, of the station of Kotergherry, it will appear, that a new pass will soon be made, commencing at "Seeramogay:" the intended terminus of the Branch rail, from which Kotergherry will then be only 12 miles distant.

The Mailoor Ghaut.

The Mailoor or Soondaputty ghaut, appears, in former years, to have been much frequented by travellers journeying from the eastern parts of the presidency, by Coimbatore, to the Hills, from which town there is a road to Soondaputty, a village at the foot of the southern part of the Neilgherries. This ghaut, which gains the summit of the Hills near "Soondabetta," is now only used by smugglers, and by the Burghers who cultivate land about Mailoor and Keel Koondah, to carry down their produce for barter for clothes, tobacco, salt, &c. The remains of a very good road still exist from the top of this ghaut all the way to Ootacamund, but it has become impassable, in many places, owing to bogs having formed in the hollows, and closed over it.

For some remarks on the comparative eligibility of the

different roads and passes, *vide* directions introductory of the tables of Routes.

These observations on the access to the Hills, as at present open to travellers, naturally lead to a description of the different stations, their means of accommodation for visitors, &c.

CHAPTER III.

DESCRIPTION OF THE SEVERAL STATIONS, &c.

OOTACAMUND.

In the year 1820, the late Mr. Sullivan, then Collector of Coimbatore, was the first person who called the attention of the Madras Government to the eligibity of "Ootacamund," the principal station, *as a Sanatarium*, and by him was erected the first mansion there, which is built entirely of stone, and remains to this day the most substantial residence in the place; others soon followed his example, and to him therefore is due the credit of having established that delightful Sanatarium. But, in the year 1819, Messrs. Whish, and Kindersly, of the Madras Civil Service, having pursued a band of smugglers of tobacco up a small pass to the N. E. of Kotergherry, it is said, first discovered these Hills, and thus became acquainted with the existence of a table-land possessing an European climate. The Editor, however, deems it right to add, that Capt. Burton, in his graphic and interesting account of the hills, which is noticed in the list of publications in the appendix, states, that in 1814, Mr. Keys, a sub-assistant and Mr. McMahon, then an apprentice in the Survey department, ascended the hills by the Danaikencotta pass, penetrated into the remotest parts, and made plans, and sent in reports of their discoveries: it is to be presumed that these plans and reports may be found amongst the records of the Madras Government.

Ootacamund is situated nearly in the centre of the table-land, about 10 miles from the southern edge of the range, and seven, in a straight line, from the northern.

It is placed directly at the base, and on the western side of Dodabet, being completely sheltered on three sides by this mountain, and only open to the W. N. W. It is elevated 7,400 feet above the level of the sea; and though the choice of the situation was, in the first instance, almost purely accidental, it could scarcely have been better selected, after a more minute acquaintance with the different localities. The climate is decidedly the most perfectly European of any point of the hills, and, upon the whole, less affected by the various vicissitudes of monsoons than any other; it has plenty of excellent water, and wood in abundance: while the facilities of access are infinitely beyond those of any spot of similar elevation yet known.

Hotels.

There are two excellent Hotels: one is called The "Union" or "Dawson's Hotel," with a detached cottage, having in all, ample accommodation for 6 or 7 families: every room is furnished in the most perfect manner, with carpets, fire-places and handsome furniture of every description, papered walls, and altogether in the style of good Hotels in England. There is also a separate house for bachelors with accommodation for seven persons, and a public room common to all, and stabling for 21 horses, coach-houses, and rooms for native servants. Mr. Dawson is a very superior well educated gentleman, and the hostess, Mrs. Dawson, the picture of florid health and good humour. And the editor is indebted to them for much kind attention paid to him. The table is always well supplied, and whatever is desired

is placed upon it. This hotel is situated at the west end as you enter the town from the "Seegoor" pass.

Similar remarks will justly apply to "Mrs. Hopley's Hotel" called "the Victoria;" which is situated at the eastern extremity of Ootacamund, as you enter the station from "Coonoor."

The terms of the Hotels are as follows:

The Union, or Dawson's Hotel.

For a lady and gentleman, ... according to accommodation required.	220 to 300	Rs.	per mensem,
Do. Do. for any broken period in a month,.........	8	,,	per diem.
For a lady or gentleman occupying two rooms, ...	200	,,	per mensem.
A gentleman dining in the public room,......................	120	,,	,,

The Victoria, or Mrs. Hopley's Hotel.

For a lady and gentleman, occupying a suite of rooms,......................	250	Rs.	per mensem.
A lady or gentleman, occupying a suite of rooms,..........................	150	,,	,,
A gentleman, with a bed-room only, and public table, ...	120	,,	,,
Grown up children, and European servants, each	30	,,	,,

Mrs. Hopley is at all times prepared to reduce her charges, upon reasonable application, according to the position and means of her visitors.

HOUSES, HOUSE-KEEPING, &c.

The houses composing the cantonment, are, generally, perched on the top of the small round hills; grouped along the base of Dodabet, or in the slopes or valleys between them; they are surrounded or approached by the graceful Acacia tree, not many years since imported from Australia, and which is propagated by its seed, in great abundance. Each house has a beautiful garden attached, abounding in every description of European flowers, some attaining a size unknown in England. One Heleotrope in Mr. Dawson's garden is 10 feet high and 30 feet in circumference, and a Verbena attaining the height of 20 feet, with the branches of a tree. The time required, and the distance travelled in going from one house to another, is, in some instances, much greater than in any cantonment in the low country; added to which, the roads leading to them are sometimes steep, and, after rains, slippery, and in wet weather horses should be rough shod.

There are at present upwards of 150 habitable houses in Ootacamund, of every size and description, from the palace built by Sir W. Rumbold, down to thatched cottages with three or four rooms. Of these, 40 or 50 (besides Sir W. Rumbold's large house, now converted into the Club House) are in point of size and accommodation fitted for the reception of large families, and more than one would, with little alteration, be large enough for the reception of the Governor General: The Marquis of Dalhousie occupied the only upper-roomed House called "Walthamstow" the property of Major Minchin; Lord Harris, "Woodcock Hall," beautifully situated overlooking the Lake: "Bishop's Downs," the property of the Bishop of Madras, commands an extensive view, embracing the Lake, with a Park of upwards of 150 acres

tastefully disposed, in wood, plantations and gardens: others are small, and better fitted for bachelors or small families. During the present year, there were between 2 and 300 visitors, from the two Presidencies of Madras and Bombay, resident, at the same time, at Ootacamund; of which from 80 to 100 were married parties with families, and there are many permanent residents, Generals and other officers of rank, with their families.

House-rent varies according to situation, extent of accommodation, &c. The large houses let at from 100 to 150 and 250 rupees a month; the smaller, at from 40 to 70 or 80. Almost all the large houses are very handsomely furnished, and all, or almost all, have ample furniture, generally of a good description. But table requisites, plate, earthenware, glass, knives and forks, bed and table linen should be taken to the hills by visitors, intending to keep house; unless they would prefer to get any of these articles in the shops, where every thing necessary for house-keeping is to be had, at prices not higher than at Madras.

House Agents are numerous—Messrs. Eckersall, Lowry Senior, Hopkins, Johnston, and several others, who have charge of the greater number of properties belonging to absent proprietors, also contract to build Houses and Cottages of every description.

Servants. Good men-servants of any description are seldom to be found at Ootacamund; but, if enquiries lead you to rely on the genuineness of the characters they produce, these, from being acclimatized, are preferable to those from the low country, who, even when well taken care of, frequently suffer at first from their own imprudence in exposing themselves, sleeping on the ground, &c. All servants who are brought up from below should have woollen clothes, and coarse

flannel under-jackets, and care should also be taken that they do not sleep on the ground, to prevent which, *charpaees*, or country cots should be given to them.

Female servants are seldom to be had, and should be brought up.

It is customary to make a slight addition to the pay of servants on the hills, partly on account of their requiring more and better food, and because rice is somewhat dearer.* The following is the scale of wages usually paid by residents: butler, 8 to 11 rupees per month; cook, 8 to 10; maty, 7 to 8; dressing and waiting boy, 6 to 7; bearer, 7; horse-keepers, 7; grass-cutters, 4 to 5.

Wood and peat are to be had in abundance: the wood is brought to your door daily, at variable but low rates, and peat is sold reasonably by two or three parties who own the Peat Bogs, and is a good substitute for coal.

Horses and Conveyances. Ponies are more useful and more hardy than horses, which sometimes suffer from the change of climate. There is, however, every facility for riding Arab and other horses, and with proper care and warm clothing, they thrive extremely well. Messrs. J. Wilson and Co. have several ponies which they let out on hire: and as they are an enterprizing firm, it is to be hoped that they will meet the increasing demands of society, and add to their numbers and equipments, and also improve their establishment by having good conveyances of every description for the convenience of the public: they would be amply repaid by thus accommodating their customers.

Ponies and Horses are always to be purchased; for there is a constant departure of visitors, and the prices asked are

* See the Bazar rates of several articles in the appendix.

always reasonable, and not higher than are paid on the plains for similar descriptions.

Good grass and straw are daily brought to the door, and are to be purchased at cheap rates. Gram or a seed resembling linseed, and well known throughout the Madras and Bombay presidencies, by the name of "Coultee" is to be had in abundance: it is boiled, and, when cool, given to the cattle, and they thrive well on it.

A tonjohn is a preferable conveyance on the hills to a palankeen, which is slow: a set of six bearers costs about 43 rupees per month.

A carriage, phæton or buggy is not in general use; at least for those who do not intend to make a protracted stay; and a palankeen carriage, or van drawn by bullocks, is always to be had, for the purposes of day or night-visiting, and for taking families to church.

A Bachelor may live on 150 Rs. and a married man and his wife, paying 40 or 50 Rs. a month rent, can keep two ponies, and their expences need not exceed 200 Rs. a month.

In short, the expence of living on the hills is not generally beyond what it is in the low country.

Public Buildings, Official Authorities, &c.

A very elegant Church in the Saxo-Gothic style, capable of holding a congregation of 3 to 400 persons, is the greatest ornament of the place. There is a resident Chaplain of the Ecclesiastical Establishment of the East India Company who holds the appointment for four years.

The present Commandant of the Hills is, Col. Geo. Paulett Cameron, C. B. an officer in the Madras army, who has distinguished himself, as well in Europe as in India, and a detail of his varied services and career, is recorded in the

Madras army list: he is equally respected and admired for his urbane and gentlemanly deportment towards all classes of society, and his equanimity of temper, when loaded with the multifarious and conflicting duties imposed upon him, occupying him from earliest dawn to the close of day, well merits the universal approbation he enjoys.

His duties are those of commanding officer over all the stations; Joint Magistrate and Justice of the Peace; Director of Police; Civil, Military and Pension Paymaster; station Staff Officer; &c. besides which regular official duties, he has constant appeals made to him by the members of society, and public in general, to entertain complaints against the misconduct of servants and others; to all of which he lends a ready ear. The editor has annexed in the appendix a Memorandum, furnished to him by Col. Cameron, exhibiting the harassing duties he has to perform, and the insufficiency of the power vested in him, to remedy defects in the law he has to administer, which are well deserving the serious consideration of the Government.

To him, every officer on his arrival at any of the stations is to report himself, and those on sick leave report themselves also to the Medical staff.

He sits daily as Police Magistrate: his OFFICE is under the same roof as the POST OFFICE Establishment.

Upon the hill on which these Offices stand, is placed a Flag-Staff, and the flag is hoisted when he is present, and it also intimates the arrival of Pay, and the arrival and departure of the Overland Mails.

Mr. Locke, the POST MASTER, is a most zealous and valuable servant of Government; and an accommodating and obliging officer to the public. His salary ought to be increased, for it is very inadequate to his services, as his duties occupy

him day and night; especially when the Overland news and letters arrive: the editor has frequently known him to be kept at Office the whole night.

Mr. Ouchterlony, the PRINCIPAL SUDDER AMEEN, is a Gentleman of well known reputation as a man of superior abilities, and great versatility of talent: a better selection for the arduous duties he has to perform, could not have been made by Government. His court, in which the sessions judge also holds his circuit, is on a conspicuous hill, adjoining the Commandant's, in a lofty commanding position: attached to the Court House is also the Gaol.

THE ELECTRIC TELEGRAPH Office is located immediately behind the Post Office, and the superintendant most efficiently performs his office.

THE OOTACAMUND CLUB, a thriving institution, now possesses the splendid mansion erected by the late Sir William Rumbold: its rules will be found in the appendix.

THE PUBLIC LIBRARY is situated near "Charing Cross;" where four roads meet, in the valley near the entrance into Ootacamund from Coonoor.

There is a small HOSPITAL; AND A DISPENSARY.

The BOTANIC and HORTICULTURAL GARDENS, under the charge of Mr. W. G. McIvor, the superintendant, occupy a beautiful site, approached by a road leading from near "Charing Cross." Under his fostering care they do great credit to his taste, skill and thorough knowledge of his profession: his reports, which he will readily furnish to visitors, give a list of fruit trees, shrubs, timber and ornamental trees, choice perennial flowers, ligneous climbers, herbs, flower and kitchen garden seeds, all of which grow and flourish in such variety, as fully to maintain the productive and luxuriant character of the Hills.

The varieties of the Acacia trees from Australia, which are now planted in ornamental groups and avenues about almost every mansion, and the deodars, pines, cypress, and even English oak trees in the gardens, shew the zeal, intelligence, and perseverance of Mr. McIvor, in the discharge of his duties. The gardens themselves are admirably well laid out, and diversified in extensive ranges of terraces, where the hill and dale afford opportunity for the display of his excellent taste.

The gardens were once chiefly supported by public subscription; but, these failing, they are now maintained by Government alone; and the sale of trees, plants and seeds fully reimburses all the expenses, and will, ere long, from the increasing demand on the spot and from all quarters, enable the superintendant to improve the gardens greatly; and he contemplates introducing glass in aid of his efforts to advance the perfection of the fruits.

MEDICAL ESTABLISHMENT.—There are two medical officers in the service of the East India Company resident at Ootacamund, whose appointment extends over a period of four years. A medical Officer, also in the service, resides at "Coonoor" and has likewise charge of "Kotergherry."

SEMINARIES and SCHOOLS.—There are several respectable boarding schools for young ladies, which have been established for some years, under the care of Miss Hale, Miss Rigel, the Loretto Convent, and others: and an excellent seminary for boys, admirably conducted by Mr. Frederick Nash. A prospectus of each of these will be found in the appendix. Messrs. Eckersall and J. P. Lowry, also attend families as private teachers.

There are also several widow ladies who take charge of children from a very early age.

In connexion with the chaplaincy there is a Boys' School for the sons of the tradespeople and others, European and East Indian; supported chiefly by public subscription, but partly by a monthly fee paid by such of the parents as are able to afford it. It was established on its present basis in 1845.

There is also a Girls' school for the daughters of the same class, which was established in 1850, supported in the same way as the Boys' school.

There is a Mission Chapel, with an ordained minister of the Church of England, for the native Christians, having a congregation varying from 80 to 100. This Mission was begun in 1852 and is entirely dependant on the voluntary contributions of the community. It supports two schools for native boys.

The Ootacamund Poor Fund provides food and clothing all the year round, for the native poor, who, either from old age, blindness, or other infirmity, are unable to work for their bread. There are at present 40 paupers on the list who receive rice every Wednesday in the Church compound, under the superintendence of the Poor Fund Committee.

Itinerants receive some small assistance from the fund, to enable them to proceed on their journey, but they are not encouraged to remain in the station.

Shops and Trades, &c.

There are numerous shops admirably well supplied with almost all that is to be found in the great emporiums of either Calcutta or Madras: amongst these are the extensive buildings of Messrs. J. Wilson & Co. who, as has already been mentioned, keep Livery Stables; and Messrs. Edwards & Co.'s premises: these, and the shops of five or six Parsee Mer-

chants, abound with articles of clothing as well for Ladies as Gentlemen, suited to the climate, or for dress in the mildest weather. All these persons import varied investments from London direct: and silver and plated ware, glass, earthen ware, cutlery, &c., and all kinds of wines, beer and spirituous liquors are abundant, and good in their several stores.

Monsr. Etienne, a highly respectable Frenchman, who has long been established here, is a first rate TAILOR, and has a large shop supplied with articles of dress and jewellery; and his wife is an excellent MILLINER: there are also two other milliners, Mrs. A. T. and Mrs. J. P. Lowry.

There are remarkably good NATIVE TAILORS in great numbers; but no SHOE-MAKERS, SILVER-SMITHS, or JEWELLERS except inferior workmen; but very fair native Joiners, Carpenters, and Blacksmiths.

There are two PIANO-FORTE tuners, and repairers, and dealers in Pianos, and other musical instruments, and music; and two excellent establishments for the hire of TRANSIT CARRIAGES; and two or three COACH-MAKERS.

A PRINTING PRESS has lately been undertaken by Mr. A. T. Lowry.

MARKETS AND BAZAR.

The large market-place and a well arranged covered building, are shewn in the panoramic view, where a market is held every Tuesday. Sheep and bullocks are brought to the bazars from the low country. Poultry, eggs, fruit, and a large supply of every kind of vegetable, potatoes, cauliflowers, peas, beans, turnips, carrots, &c., are exhibited in the market-place, chiefly the produce of the Hills; which confirms all that has been said of their inexhaustible productiveness and capabilities.

UTTARPARA PUBLIC LIBRARY

BEEF and MUTTON are daily brought from the bazars to the door; and are generally very fair meat.

There is an excellent European BAKER, who resides at the watermill at the end of the lake; and his bread is much preferred to that of the natives, although their's is fully equal to that of the natives of Calcutta.

MILK and BUTTER of superior quality is daily brought to the door; but, if a cow is hired by the month and picketted on the hill on which the house stands, you secure as good milk as you could wish to have, and thus only can you guard against the risk of adulteration.

EXCURSIONS, RIDES, &c.

An artificial lake, formed by damming up the opening between two hills, so as to produce a sheet of water nearly one and half mile long, and in many places 40 feet deep, adds considerably both to the ornament and comfort of the place.

An excellent, and nearly level road, leads completely round the lake, forming a very pleasant ride or drive of from six to seven miles, including the windings. The roads in the cantonment, and in fact all over this part of the Hills, are excellent, and will soon be metalled; and even now, after the heaviest rains they become dry in an hour, so little is exercise interrupted by the showers. It would be perfectly practicable to enjoy a canter of 27 miles, or even to drive a phæton in a straight line, with scarce an interruption, from Coonoor to Neddiwuttum; and a day may be spent in a diversified ride or drive to any extent over hill and dale, through ever varying scenery, uninterrupted by any obstacle; and if, perchance, a heavy shower is encountered, the rider has only to return to his house, change his dress, and again remount his horse, and resume his ride: the Editor

has constantly done this, and has known the fair sex, who all seemed to be accomplished and fearless riders, enjoying the showers, and never suffering from the exposure.

There are several places to visit which picnic parties are frequently formed, namely, MATEEMUND; FAIR LAWNS; the summits or slopes of SNOWDON and DODABET; KAITEE, and its neighbouring water-fall at KATAIRY; and other lovely spots near at hand; and the ride round ELK-HILL from BISHOP'S DOWNS, up to DODABET, is as varied and magnificent, and enjoyable at all hours of the day, as any perhaps in Europe. Another almost equally attractive ride commences from the road leading to the Botanic Gardens, diverging to the left, and making a circuit round to SNOWDON and DODABET; but the varieties of picturesque rides are so numerous, that it would be in vain to attempt to describe them.

Then, COONOOR to the East; and the AVALANCHE, and SISPARA BUNGALOWS to the S. W. from which, scenery as grand and sublime as the eye could desire to behold, is to be seen, totally differing from the quiet and repose of that around Ootacamund. In visiting these in succession, you experience the fullest sense of the enjoyment to be derived from air and exercise, and the pleasurable emotions of viewing the beauties of nature, in every form of endless variety. We must not omit to mention "MAKOORTY PEAK" about 14 miles to the W. it is about 8,500 feet high; from whence, and around it, as already described, magnificent scenery is beheld: it is a spot held sacred by the Todas, as the residence of a personage whom they believe to be the keeper of the gates of Heaven. "Orange VALLEY" should also be mentioned, lying to the N. E. and distant about 10 miles, where oranges grow wild, the climate being 6° higher than that of Ootacamund.

KAITEE is distant about 3 miles from Ootacamund: a Government farm was established in the valley in which it stands, about the year 1831, in the expectation that all European products would succeed well from its sheltered position. The project, however, was eventually abandoned, the return having proved far less than was anticipated. The Bungalow at the farm was afterwards occupied, for some time, by the Governor of Pondicherry.

At a subsequent period, Lord Elphinstone, then Governor of Madras, fancied the spot for the erection of a dwelling-house, and his Lordship obtained the land on the usual lease of 99 years. No sooner was the transfer concluded, than his Lordship began to enlarge the old building; and, in course of time, converted the property into one well worthy of a nobleman's residence. The house was magnificently furnished, the exquisite taste of the late Count D'Orsay having been called into requisition for this purpose; the grounds were tastefully laid out; and the whole assumed the appearance of a beautiful English Manor house.

In 1845, or about that time, the property was purchased by the late Mr. Casmajor, of the Madras Civil Service, for 15,000 Rupees, and about 10,000 rupees more were expended by him in alterations. At his death, he left the greater part of his property to the Basil Mission, of which he had been a liberal supporter while living, but the house itself was advertised for sale; it was purchased by the Basil Society for 10,000 Rupees. The Neilgherry branch of the Basil Mission is supported by the interest of the money realized from the sale of the property; that sum having, in accordance with the late Mr. Casmajor's will, been invested in the funds for that purpose.

No sooner had Kaitee become the property of the Basil

Missionary Society, than orders were sent from Germany to dispose of such of the fittings and furniture as were unsuited to a Mission House. Carpets, curtains, marble chimney-pieces, and other decorations were therefore sold at public auction, and about 4,000 Rupees only were thus realized. Such was the result which, in the course of a very few years, followed the enormous outlay expended upon the property by the late Governor of Madras. The house was a good deal altered during Mr. Casmajor's time, and now but little remains, to remind the visitor of the gorgeous mansion of former days.

COONOOR

→ Is situated at the South extremity of the range, close to the edge of the hills, and at the head of the Coonoor pass: its elevation is about 6,100 feet above the level of the sea; and the mean annual range of the Thermometer is about 65° of the Barometer about 24°; and rain about 55 inches. It is milder than Kotergherry, but, from its situation, is subject to fogs at particular seasons, which come sweeping up the Ghaut: these however soon disappear. On the other hand, it has the advantage of being on the direct road to Ootacamund from Meetapollium, from which it is distant 15 miles: it is distant from Jackatalla about two miles, but an improved road will soon reduce the distance to about one mile: from Ootacamund it is distant 10 miles; and from Kotergherry 12 miles at present, but a new cut will reduce it to about 8 miles.

There is a good Government Bungalow here, comprising several rooms, where visitors may remain for 10 days, if desirous of doing so: a butler, cook and other servants are in attendance, and provisions are always to be had; but if better

fare is required, there is the excellent hotel kept by Mr. and Mrs. Davison close at hand, from which all the luxuries even of the table can be procured; and they are most attentive and obliging persons.

The hotel consists of 4 detached Bungalows, beautifully situated near the church, which is a handsome structure, in which a clergyman of the Established Church performs service regularly, but his residence is at Jackatalla.

The Bungalows are elegantly furnished, each consisting of a dining room and two bed-rooms, with dressing rooms and baths attached to each, provided with every comfort.

At this hotel, visitors may be assured of always having an a bundant table, well supplied with the finest beef, mutton and fowls. Mr. Davison is a well educated man, and a first rate gardener and botanist, and can place on the table oranges, peaches, nectarines, plums, (apples amongst which is the new-town pippin) and pears, all equal to any that Covent Garden exhibits; and his gardens are filled with trees loaded with these fruits, and a great variety of splendid flowers.

A medical Officer in the Company's Service resides here, his appointment being as those at Ootacamund; and he attends Kotergherry also once a week or oftener, if required.

There are 24 well built, and well furnished houses and cottages at this station. General Kennett, Colonel Woodfall, and others are permanent residents, and the rent of the other houses varies from 120 to 50 or 30 rupees a month.

The shops are all kept by natives, and are but ill-supplied with general stores; but as Ootacamund is so near, all that visitors require can be readily sent to them from that station; and from thence, also, servants must be procured, as few are available on the spot.

Ponies or bullock-carriages are procured from Ootacamund, whenever wanted.

The most striking object in the beautiful scenery around, are the remains of a Hill Fort called "Hullicuildroog," in a very commanding position, on the highest peak in the neighbourhood, which appears in the sketch of that station accompanying this work; to this hill pic-nic excursions are made, and the ride to it opens out a succession of splendid scenery, which, seen from the summit, amply repays the toil of the ascent.

KOTERGHERRY

Is situated in the north-east angle of the plateau, immediately overlooking the low country, and at the head of the Kotergherry Pass, about 14½ miles distant from Ootacamund, 12 from Coonoor, and 10 from Jackatalla.

Ponies, when wanted, must be sent for from Ootacamund; and as yet there is no carriage road to any of the other stations.

When the rail-road is extended to the foot of the Hills, the distance of Kotergherry from the intended terminus at "Seeramogay," will be only 12 miles; and a good road will be cut to it through the Ghaut at that point.

The elevation is about 6,500 feet above the sea-level; and it is very favorably protected from the violence of the S. W. monsoon by the Dodabetta range, which stands out like a huge wall to screen it. The average fall of rain, the chief part of which occurs on the hills during the monsoon, cannot be called excessive, especially when compared with the visitations in this respect experienced in the neighbouring province of Malabar. This average may be taken to be 50 inches, while at Coonoor it is estimated at about 55, and at Ootacamund 60 inches. The mean annual temperature is about 63°.

Whatever difference may appear between the meteorological Tables in the Appendix, will easily be accounted for by the degree of accuracy of the observers or the instruments at their command.

The climate possesses many advantages over Ootacamund and Coonoor: it is drier than the former, and much cooler and fresher than the latter, for a north wind prevails, when there is little or none at Coonoor. But, on the other hand, neither of these stations has the bracing, invigorating effects of the more lofty parts of the table-land, and persons in tolerably confirmed health, give a very decided preference to Ootacamund.

Kotergherry was preferred to either of the other stations by the Marquis of Dalhousie, who resided there for six months, in the principal mansion called "Koter-hall:" this house was built in 1830; and the station may date its claim, from that period, to be considered the great rival of Ootacamund. Lord Dalhouisie was so much pleased with his residence that he laid out a large sum in improvements. This property formerly belonged to Bishop Spencer, afterwards to General Gibson, and now belongs to Major Briggs, his son-in-law.

There are eight other excellent houses at Kotergherry, besides cottages.

The Church is small, but could be easily enlarged.

There is no resident clergyman here. The station commands, perhaps, the most exquisite view to be obtained any where in the hills, of the plain, and of a range of hills called "Lambton's range" with its ever-varying hues: beautiful rides are found in every direction amidst the most lovely scenery.

The orange does not thrive here; but at Coonoor both it and the peach do, and ripen to perfection: pears are

abundant, and apples come to perfection at Kotergherry when cultivated. All the vegetables and flowers of a temperate climate grow and flourish in great profusion.

DIMHUTTY close to Kotergherry, no longer exists as a station, but the climate is superior to the latter for the cultivation of fruits. ORANGE-VALLEY is about 6 miles distant, and more sheltered than either; and admirably adapted for the cultivation of oranges and all the more delicate fruits.

JACKATALLA.

The Editor is indebted to Dr. Macbeth of H. M. 74th Highlanders, a wing of which Regiment is stationed at Jackatalla, for much of the following account of that Cantonment; and his reports on the topography and medical statistics of the station, will, we trust, be published by order of the Madras Government. Captain Francis has also furnished the information regarding the intended new roads, as after described, and other particulars.

Dr. Macbeth remarks, that after giving a fair and unbiassed consideration to all the natural advantages of the different localities, he is decidedly of opinion that no other, in every respect equally eligible, could have been found on the hills.

The height of Jackatalla is about 6,100 feet above the sea level. The mean annual range of the Thermometer is about 64°-8″; of the Barometer 21°; and rain about 70 inches.

It is distant about two miles from Coonoor; but by intended improvements will be one mile; 9 miles from Ootacamund; and 10 from Kotergherry. The vegetation is almost incredible: three and even four crops of potatoes may be raised in twelve months; and in a month or five weeks after planting, their produce may be taken up: the same

remarks apply almost equally to the other stations. All other European vegetables are luxuriant, and produce all the year round; and every kind of English fruit tree bears and flourishes to perfection, as at Coonoor; and ornamental trees, pines, deodars, willows, &c., thrive admirably.

At Jackatalla they suffer comparatively little from the S. W. monsoon; and the sanatary condition of the station is shewn to be most satisfactory by the fact, that out of 531 men, the average strength of the wing, the fatal cases, amounting altogether to 17 during the year 1854-55, occurred (with one or two exceptions) from the effects of previous organic disease, contracted before the troops came to Jackatalla, and before they had any chance of benefiting by the climate.

The Bazar is well supplied with beef and mutton: the coffee grown on the hills is excellent and cheap. Fruits and vegetables are abundant, and springs of excellent water are on all sides.

There are, as yet, only about eight private residences, but two of these, Dr. Macbeth's, and Captain Francis', occupied by Colonel McDuff, are splendid mansions; and the station is rapidly connecting itself with "Coonoor," from which it is only separated by a narrow gorge; and houses are being erected in every direction: a Clergyman of the Established Church resides at Jackatalla and does duty also at Coonoor.

A handsome range of Barracks, is nearly completed at Jackatalla; and it is to be hoped that the Marquis of Dalhousie's expectation, that at least a whole Regiment would soon be located there, will speedily be realized; and, at no very distant period, perhaps, it will become a station for more than one Regiment of H. M.'s service.

The valley of Jackatalla takes its title from the principal of a cluster of villages, higher up the valley, towards Doda-

bet, which derives its Canarese name from the prevalence of a species of barberry.

The climate bids fair to be one of those most preferred on the Hills: it does not differ much from that of Coonoor, and it escapes the fogs which prevail there for several months in the year. These white mists, which roll up the Coonoor ravine about 10 o'clock in the forenoon, and obscure the whole landscape, draw off towards the north-west and extend themselves up the same valley to Kantari, leaving Jackatalla clear and bright. It has been proposed, and the proposal has met with the approval of Government, to form a direct communication between the cantonment of Jackatalla and the new Coonoor and Ootacamund road, by means of an embankment across the valley, by which a large ornamental sheet of water will be formed, about 35 feet deep.

When the branch of the railroad, now in progress of execution, is carried to the terminus at "Seeramogay," a new pass from thence will be constructed up the Ghaut at that point, and will be of easy gradients; and much improvement will be made on the plateau leading to Jackatalla, from Kotergherry, from which the terminus will be only 12 miles.

There is abundance of game of different descriptions in the woods and ravines about Jackatalla. A pack of hounds is kept by the Officers of the Regiment, and the jackal affords excellent runs when they throw off in the neighbourhood of Ootacamund, and other tolerably level parts.

Tigers sometimes approach near to Jackatalla: in August 1856, Lt. Thackery of the 74th, shot a tiger, 12 feet 6 inches in length from the nose to the tip of the tail.

Tenure of Lands.

Land is held by European settlers on the Neilgherries, under a *puttium* or grant from Government for a term of

99 years,* but renewable in perpetuity, so long as the regulated assessment is paid. The Todars hold their land by right of immemorial occupation, alleging that their ancestors came to the Neilgherries before there were any kings or sovereign rulers in Southern India, and that they never paid tax or tribute to any one; but Government, under the orders of the Court of Directors, has declared the rights of the Todars to be only those of pasturage over the hills; allowing them to retain their present locations; and their numbers are gradually decreasing.

* See "Manual of Instructions as to Tenures" in the Appendix.

CHAPTER IV.

TOPOGRAPHY.

The Neilgherry hills are situated between the parallels of 11° 10′ and 11° 32′ N. latitude, and 76° 59′ and 77° 31′ E. longitude from Greenwich. Their greatest extent, in an oblique direction, from S. W. to N. E. is about 50 miles, and their extreme breadth 25 miles, measuring from the bottom of the Ghauts at each extreme; and the plateau may be considered as being 30 to 40 miles in length, and from 8 to 15 in breadth. Taking into account the great undulation of the surface, and the circumstance of the breadth, above stated, being pretty constant throughout, their superficial extent may be fairly estimated at about 700 square geographical miles.

The area of the plateau as defined on the north-west, north, east, and south, by the crest of the mass of mountains, and on the south-west by the outline of the "Koondahs," is found by a late survey to comprise 268,491 square acres in its geographical extent: but owing to the ceaseless undulations prevailing over the whole surface, a far greater amount of land is actually available for cultivation.

Of this quantity only 23,772 acres have been brought under cultivation, leaving 244,772 acres either entirely waste, or appropriated for grazing cattle by the various Hill tribes.

They form the abutment or termination of the immense table-land of central India, commencing with Hindoostan and the Dekkhun, and continued through Mysore, bounded on the W. by the Western Ghâts, and on the E. by the less strongly marked line of the Eastern Ghâts. From the table-land of Mysore, with which they are connected by a narrow neck of land, about 15 miles wide, they rise to the height of 3,500 feet, and are divided from the E. and W. Ghâts by a deep fissure on each side, of not less than 15 miles in width; on every other side they rise abruptly from the subjacent plains of Malabar and Coimbatoor, in one vast precipitous mass, to the height of from 5 to 6 or 7,500 feet. Their isolated situation, completely separated from the surrounding country, is one of the most remarkable features in their position, and may serve to account for many of the peculiarities of climate found to exist upon them.

They are composed of three distinct ranges, or groups of hills, closely connected together, but which, though nearly of the same general elevation, vary considerably in their aspect, connection, and grouping.

The range to the westward, though forming a continuous line, bears two distinct names. The northern part, forming a narrow line, commencing at the Goodaloor Pass, being called the Neddimulla hills; and the southern division, composing a very distinct and remarkable group, being known as the Koondahs. The central or principal range is entirely formed by a continuous chain of hills, rising gradually on each side to the summit of Dodabetta, the highest of the whole group, and the loftiest point yet discovered, south of the Himalaya, being 8,760 feet above the sea level. The station of Ootacamund is situated directly

at its base, on the W. side, and it is still more important to observe, that it forms the line of separation between the N. E. and S. W. monsoons, the whole of the range to the W. of Dodabet being chiefly affected by the S. W. or Malabar monsoon, and that to the eastward by the N. E. or Madras monsoon.

The division to the eastward, having received no distinct appellation, may be distinguished as the Kotergherry range, the station of that name being situated on it. It contains fewer peaks, and is inferior in elevation to either of the other two.

The elevation of some of the principal points on the different ranges, above the level of the sea, as well as some neighbouring stations in the low country, will be given in the appendix.

No point on the hills, it will be observed, is less than 700 feet above fever range, (assuming the latter to be about 4,500 feet, the limit generally assigned,) and most of them from 1,500 to 2,900 feet beyond it.

The base of the hills is completely surrounded by a belt of dense jungle of various breadth, and rising in general to the height of from 2,500 to 3,500 feet on their declivities. The line of demarcation is very strongly marked, there being generally an open space from 1½ to 2 miles wide, nearly destitute of trees all the way round. Above this space the character of the vegetation is completely changed, and the forests assume the appearance of woods in temperate climates, besides being nearly destitute of underwood. The breadth of the belt of jungle is very various; it is, however, nowhere greater than 20 miles, (between Mungalum and Goodaloor on the Mysore side, where it joins the Wynaad jungle,) and in many places it does not exceed six, as at Matepollium,

where it is crossed by the great road to Ootacamund by the Coonoor Pass.

The surface of the table-land on the summit of the hills is much undulated, and presents various characteristics in the different divisions. The only circumstance common to the whole is, the occurrence of swamps, of various extent, in the valleys formed by the undulations. The soil in these swamps is of considerable depth, and very rich; in some it forms large beds of peat bog, from which Ootacamund is abundantly supplied with an excellent substitute for coal. The vegetation on the surface, however, is generally luxuriant, and they are always traversed by a stream of water, which, after percolating through them, issues forth as clear, pure, and as fit for use as if just taken from the spring. Nothing like miasm or exhalation exists in or near these swamps; as a proof of which, Todarmunds or villages are frequently found in their immediate vicinity, and the nature of the vegetation is entirely different from that which characterizes swamps in the low country.

The Koondahs, towards the W. or Malabar side, rise very suddenly from the plains below, and terminate in immense rocky precipices, presenting some of the grandest and most romantic scenery to be found in the world. This is particularly remarkable at the junction of the Nedimulla hills with the range of the Koondahs, properly so called. The outline of the summits forms an immense circular basin, bordered with precipices, every where perpendicular, in many places overhanging, and of such a height, that a stone dropped from the edge, will in many places descend at least 6000 feet, at one bound, before reaching the bottom; the crests of the rocks being at the same time broken into the most irregular and fantastic forms. A minute examination of the

whole of this line presents only one accessible point, the site of the new Koondah Pass, which has been more particularly described.

The table-land above, is broken into a number of long rounded ridges, with narrow valleys interposed, and richly wooded in the more sheltered spots. A striking peculiarity of these woods, common in fact to the whole hills, is, their being nearly destitute of underwood, and having their borders so well defined as to resemble the ornamental plantations of a gentleman's park; so complete is the resemblance, so artificially are they disposed, and so perfect is the keeping of the scenery, that in many parts one is tempted to look round for the castle or seat to which they belong.

The base of one hill rises close to that of another, leaving but a small interval between, so that a true valley is very rare, and a level surface of any extent, almost unknown, except on the roads round and between the hills, where you may ride or drive for any extent amidst ever varying scenery. It is difficult to find appropriate terms to convey an accurate description of these singularly smooth, rounded and undulating hills; they present truly a "surging scene" to use an expression of Coleridge, resembling the billows of the sea suddenly stilled, solidified and fixed, while in their full career of heaving commotion. This is more applicable to the lower hills, but many upwards of a thousand feet high have the same rounded contour. The valleys, or ravines at the foot of these hills are uniformly wet, sometimes having a rivulet running through them, but more often being marshy, there being no exit to admit of drainage. From these moist places, commence the beautiful clusters of wood, called Sholahs, which form a peculiarly striking feature in the scenery; and the whole surface of these verdant hills, from base to

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summit, is bespangled with a variety of the most beautiful wild flowers, of every diversity of colour; the trees, among which appear the crimson Rhododendron and a white camelia, varying in shade and richness of foliage; and some covered with moss, assuming all the hoary appearance of winter; while the banks of the rills and streamlets, that meander at their base, are lined with the dog-rose and jessamine; and all around are seen the strawberry, blackberry, toparra, and numerous other wild fruits, flourishing in spontaneous luxuriance.

Several of the little streams here mentioned, meeting at one point, fall into a natural basin, which confined at its south-western extremity by a strong mound of earth, forms the lake, of five or six miles circuit. This beautiful piece of water, which, in some parts, spreads out to a considerable width, and in others winds in a serpentine course among hills, gently rising from its banks, and clothed with the softest verdure, has, as already mentioned, a public carriage road surrounding it, affording one of the most scenic, healthful, and agreeable drives of which India can boast.

On the table-land of the Neilgherries, there are properly speaking no rivers, but the streams which pour down on all sides, to form the Bowany and Mayar, which wash the base of the mountains, are very numerous. The Pycara is, however, a considerable stream, and flows down the N. W. angle to join the Mayar; and the waters of the lake, and the mountain rills to the N. of Ootacamund, become a torrent, which rushes down the gorge, from Kulhutty to Seegoor, forming the source of the Mayar.

The waters never accumulate in a sufficient body to form cataracts of much magnitude or sublimity, but the falls at Katary and Kulhutty are picturesque; as are also those of

the tributaries of the Bowany river in the Koondahs; and there is a considerable fall or weir, in the Pycara river.

The soil of the Hills is exceedingly rich, and covered with a short close green sward, which is maintained in a constant state of verdure by the abundant supply of moisture.

The Bowany river takes its rise in the Koondahs, flowing through a deep fissure till it reaches the S. W. angle of the range, when it makes a sudden turn to the eastward. It is joined by a great number of tributary streams, each of the lateral valleys having its own brook of beautifully limpid water. Several of these rise within a few feet of the edge of the precipice, bordering the hills on the west; but with scarce an exception all flow to the eastward. The edge of the Koondahs, towards Ootacamund, is broken into a number of valleys nearly filled with wood, and interspersed with patches of verdure.

The steepness of the sides of the valleys on the Koondahs, and the loose nature of the soil, has given rise to a number of what are called in French *eboulements*, or earth avalanches, the earth having slipped down in large masses, leaving a circular vacuity in the edge of the hill above. One of the most remarkable of these took place about 33 years ago, and is easily recognised at the distance of 12 or 15 miles; it is close to the point at which the new road ascends the Koondahs. The cause was probably the bursting of a water-spout immediately above the spot, the earth having been in all probability previously loosened by the filtration of water through the subjacent strata.

Towards the lower part of the valleys, which is still encumbered with rocks, trunks of trees, masses of earth, &c., a chalybeate spring is found issuing from below the debris, and mingling with the rivulet, to which it imparts an ochrey tinge.

This spring was examined and analysed (as far as our utter want of nearly all the necessary instruments would admit) by Dr. Glen and myself. We found it to contain a considerable portion of red oxide of iron, held in solution by carbonic acid gas, and from its great strength, its purity, and its freedom from unpleasant taste and smell, we were led to conclude that it may prove highly useful in cases of debility of the digestive organs, &c., but as yet no opportunity has occurred of putting this conjecture to the decisive test of experiment.*

A considerable stream, rising at the angle of the Koondahs, flows close along their base, and descends the Keiloor Pass to join the Bowany; it forms a sort of boundary between them and the next or Dodabet division of the range. The Neddimulla hills, commencing at the N. angle of the Koondahs, run along in a N. N. E. direction as far as Neddiwittum, at the head of the Goodaloor Pass, where they terminate abruptly. They are of considerable elevation, and contain one or two remarkable peaks; Makoortee, for instance, which has already been described, is distinctly visible from the sea coast near Calicut, and from Ootacamund. The

* Numerous springs, containing salts of iron, are found in almost every part of the hills, but the one above-mentioned is much the strongest and purest yet examined, and probably not the least of its recommendations is, its situation in an accessible spot, surrounded by beautiful scenery, and near the bungalow erected for the accommodation of travellers by the Koondah road. It may also not be irrelevant to mention, that being situated in a hollow, nearly surrounded by hills, and considerably lower than the general level of the table-land, the climate during the winter months, is milder and more equable than that of Ootacamund.

ridge is narrow, and generally rather rocky and bare; on the Malabar side, it presents, like the Koondahs, an almost continuous line of precipices, the scenery being bold, grand, and romantic. They are separated from the central table-land by a considerable stream called the *Pykarra river*, which, descending the N. face of the hills by a succession of falls, joins the Mayar, and sweeping round the whole N. and N. W. sides of the hills, runs into the Bowany near *Danaikeneottah in Coimbatoor.* Like all the rivers on this side, its bed is intersected, every here and there, by transverse ridges of sienite, having a considerable dip, with soft soil in the intervals, which is worn away by the force of the stream, so as to form deep pools resting on the ridges.

The scenery in the vicinity of the Pykarra, is in many places exceedingly beautiful, being bordered by rounded hills well wooded, and sinking alternately into green grassy glades.

The next or central division is, in extent, as in other respects, the most important of the three. The portion of it adjoining the Koondahs and Neddimulla hills, of nearly the same general elevation throughout, is broken into an immense number of little round hills, like tea-cups bottom upwards, with valleys of various dimensions interposed. Some of these hills are clothed with wood to their very summits, and most of them have more or less wood round their bases, or in the deep hollows between them and the next hills. The southern part of the table-land is highly cultivated, and very populous; there are also numerous villages on the southern slope towards Billycull; but the rest of the surface, where not wooded, is entirely occupied by pasture land, and is the head-quarters of the Todar population,

whose munds or villages are found scattered over it, generally in the most sheltered nooks, and always close to a wood.

The Dodabet range rises at the N. extremity of this division, and crossing it obliquely (forming its eastern boundary) in a direction from N. N. W. to S. S. E. terminates in bold overhanging rocks beyond Coonoor. The range, when regarded from a distance, seems to form one vast pyramid with a very wide base, running in the direction above stated, and having consequently very gradually sloping sides. The inclination, however, on the E. and W. faces is greater, and the ascent rather abrupt. The summit 8,760 feet above the level of the sea, and 1,344 feet above Ootacamund, is composed of a round hummock with a flattened top, (on which the Observatory has been erected since Dr. Baikie's time) and commanding a most extensive view in every direction, except the W. where the horizon is shut in by the line of the Koondahs, of nearly equal elevation with itself. Directly at its base on the W. side is situated the Station of OOTACAMUND, in a basin formed by the body of the mountain on one side, and two extensive spurs on the N. and S. so that the only opening is towards the W. Though, as already mentioned, originally chosen almost by accident, the site of the Station appears to possess almost every advantage of climate, shelter, accessibility and command of fuel and water, and though last, not least, its position, in the centre of the table-land, at about eight miles from the verge of the hills on either side, ensures it against even the suspicion of miasm, or impure atmosphere.

COONOOR (as already described), is situated at the S. E. extremity of the range, close to the edge of the hills; and is chiefly remarkable, as being placed at the head of the

magnificent Ghât of the same name, which forms the great road to the whole S. and E. of India.

The Ghât runs up a deep fissure, betwixt the rocks terminating the Dodabet range and a long projecting spur, thickly clothed with wood, and distinguished by three or four rounded eminences, on the outermost of which is situated the hill fort called HullicuIdroog, in a very commanding situation, the rocks descending almost perpendicularly into the low country on every side, except that on which it is approached from the table-land. The remains of a similar fort are to be found on a high rock opposite Billycull, and a third at a place called Atra, beyond Kotergherry. It is difficult to conceive for what purpose these forts were intended, the more so, as considerable labour and expence must have been incurred in their construction, while their isolated position and excessive difficulty of access must have made them nugatory, as regards any object of defence or protection : still less could they be intended to command the passes of the hills, none of which are sufficiently near. The only plausible conjecture is, that they were intended as state prisons or repositories of treasure. They are said, I know not on what authority, to have been constructed by Hyder Ally.*

The line of separation betwixt the central and eastern range is not so well marked, as between that and the Koondahs.

The N. E face of Dodabet descends with a very sudden slope, the hollows being filled with wood, and the bottoms of the interjacent valleys occupied by swamps. After cross-

* Captain Harkness gives a different account of their origin. See his work, noticed in the List of Publications.—Ed.

ing one or two of these valleys, the range becomes broken into a succession of small conical rocky hills, at some distance apart, and surrounded by a sort of table-land, on which Kotergherry is placed. The country in its neighbourhood is covered by bushes, has but few trees or forests, and is neither so picturesque nor so varied as on the opposite side of the hills. It is intersected by numerous deep valleys, descending gradually from the centre, and debouching into the low country. One of the most remarkable of these is known as the Orange valley, from the number of wild orange and lime trees found in it. It commences at the N. E. angle of Dodabet, and makes a sweep round the base of the Kotergherry table-land, till it arrives opposite the Guzzlehutty Pass, when it descends abruptly into the low country. Its general level is much below that of the table-land, probably not exceeding 4,500 feet above the sea, from which circumstance, and its being shut in on both sides by steep hills, its average temperature is much higher than that of any neighbouring point on the hills. The soil in the bottom of the valley is exceedingly deep and rich, and the character of the vegetation approaches the tropical, or at least that of the southern portions of the temperate regions.

DIMHUTTY is situated on a plateau between Kotergherry and the Orange valley, lower than the former.

Beyond Kotergherry, the hills run out into a number of long narrow ridges, gradually descending into the low country of Coimbatoor, but, though in some places rocky, scarcely any where so precipitous as the western face of the hills, and the scenery is consequently less grand and striking. Immediately opposite the termination of the hills in this direction, and separated from them by a deep valley filled with dense jungle, is the Guzzlehutty Pass, leading from

Coimbatoor into Mysore; formerly much frequented, but now nearly deserted except by the market people. Beyond the Guzzlehutty Pass, rise the Bella Runjum Hills, or Bulgherries, so named (I believe) from a celebrated temple; they are of considerable height, but nearly unexplored from the difficulty of access and the want of supplies.

CHAPTER V.

CLIMATE.

On this very important subject, I may be excused for entering at some length, and as what I shall have to state is the result principally of my own observations, closely directed to its nature and effects, during the whole of a residence of nearly three years, I have no hesitation in claiming for my statements the merit of accuracy at least.

There are three circumstances connected with the Neilgherries which must have a material effect on their climate.

The first is, their elevation above the level of the sea, and their being placed between two seas.

The second, their position near the line of demarcation of the two monsoons.

The third, their isolated position, at a great distance from mountains or table-land, of equal or nearly equal height.

I. The temperature of the air, as has been ascertained by a number of experiments, and elaborate calculations founded thereon, undergoes a regular and graduated diminution, as it becomes more rarefied in ascending from the surface of the earth, owing, as is well known, to its increased capacity for caloric. A variety of formulæ have been given for calculating the exact reduction of temperature at given heights, but it will be sufficiently accurate for our purpose to say, that at

heights not exceeding two miles, the difference is 1° of Fahrenheit for every 300 feet of ascent.

Now the mean annual temperature at the level of the sea in the latitude of the hills, according to the formulæ of Mayer, as corrected by Playfair, is 83°*, and the height of Ootacamund, above the level of the sea, being 7,416 feet, the calculation will be as follows $\frac{7416}{300}=24^\circ.72'$ the theoretic difference of temperature between the level of the sea and Ootacamund, consequently $83^\circ-24^\circ.72'=58^\circ.28$, mean annual temperature of Ootacamund. And it will be seen hereafter that the annual temperature of Ootacamund, deduced from the mean of 25 months' observations, is 58°.68, so that the difference between this, the observed mean, and that deduced from theory, is only 0°.40, which, trifling as it is, is perhaps to be accounted for by the fact of the observations alluded to not being for consecutive months; the mean for some of the *colder* months being wanting.

The next most obvious effect of the elevation of these regions is, the increased power of the sun's direct rays, in proportion as the conducting power of the medium is diminished; in other words, as the air is rarefied. This effect is further increased by the smaller absorption of heat in its passage to the surface, the thickness of the stratum of air through which the sun's rays have to pass, being diminished by the amount of the elevation above the level of the sea. No exact formulæ for calculating this effect of the sun's rays have yet been given, owing partly to the want of good photometrical observations, and the number of disturbing causes to be taken into account.

That such is the fact will, however, be evident from consulting the annexed meteorological tables, where it will be

* Brewster's Edin. Encyclop. Article Meteorology.

seen that the photometer at 10 A. M., in the dry season, frequently indicates 120° (12° centissimal), when the thermometer, in the shade, only shews a temperature of 60° or 61° (15·5 or 16·1), or to render the difference more intelligible, when the temperature of the air in the shade is only 60°, the increase of heat from the sun's direct rays would raise it to 81°6.*

The effect of this increased power of the sun's rays on the general temperature, and on the soil of elevated regions, would be very considerable, were it not for certain disturbing causes, the most powerful of which is the wind, which by agitation of the atmosphere scatters the heat before it can accumulate. When moving along the ground at the rate of eight miles an hour, it diminishes the calorific action of the light from the sun and sky one-half, but if it sweeps with a velocity of 16, 24, or 32 miles in the hour, it will reduce the whole effect successively to the 3rd, the 4th, or the 5th of its standard.† The impression made on the ground therefore, seldom exceeds the third part of the computed measure, and often will not amount to one-fifth; and its effects on the air in the shade are probably nearly nugatory, from its increased capacity for caloric, and its bad conducting power. A similar modifying effect is produced by the ground being covered with grass or plants, the multiplied surface of which, exposed to the contact of the air, dissipates the greater part of the heat before it accumulates.

* This leads to a very important caution on the part of Invalids and others resorting to all mountain regions in tropical latitudes, (at least during the dry season), viz. to expose themselves as little as possible to the direct rays of the sun, without some adequate protection. See Article " Hints to Invalids."

† Encyclop. Britannica, Article, Climate.

A corresponding effect has been remarked with regard to the impression of cold, but this is only true to a certain extent, as from the great clearness of the sky in elevated situations the effect of radiation is greatly increased. It has in fact been frequently observed on the hills, as well as elsewhere, that plants, grass, and other substances near the ground are from this cause, viz. increased radiation, strongly frozen, when the circumambient air indicates a temperature some degrees above freezing point.

These, and the other less important effects of the relative altitude will be more evident when we speak of the various conditions of the atmosphere in detail, to which we will also refer our consideration of the second modifying circumstance, namely, the situation of the hills between the influence of the two monsoons, and partaking of both ; merely observing, that the sky being covered with clouds during the months of June, July, and August, when the sun is vertical, tends greatly to equalize the temperature, and to obviate the effects which would otherwise be produced on vegetation, and on the human body, by the united power of the sun's rays and the excessive dryness of the atmosphere.

The third circumstance which we have stated, as naturally influencing the climate of the hills, and certainly not the least important, is their isolated position at a great distance from land of equal or nearly equal elevation. This will be better understood by comparing them with the subordinate ranges, leaning against the lofty chains of the Pyrenees, the Alps, Caucasus, or Himalaya. In all these situations it is found that the temperature is liable to great, sudden, and rapid variations. The air, when heated in the plains below, rises to a certain height, but instead of passing over the first range, it rests there ; producing a considerable elevation of

temperature, until it is suddenly succeeded by a column of cold air, falling by its own weight from the tops of the snow-mountains behind, depressing the temperature several degrees, and generally succeeded by a deposition of moisture (according to the law which guides the capacity of air for moisture), in the shape of rain or snow. In the warmer latitudes, the variation is proportionably much greater, it being no unusual occurrence for a current of air, approaching in heat to that of a land wind, to be suddenly succeeded by a blast from the opposite direction as cold as ice. This I have frequently observed at Teflis, and other places bordering on the Caucasus, and it is not without reason assigned as one of the causes of their extreme unhealthiness at particular seasons. Another consequence of the vicinity of such ranges to lofty mountains is, the frequent changes of the electrical state of the atmosphere, indicated by thunder-storms, heavy falls of rain, &c. &c. All these effects are much modified by the comparative distance and elevation of the snowy ranges, but they must always operate unfavourably on the climate of the lower chains, as regards equability of temperature, one of the most important points connected with the choice of a Sanatarium, and we are justified in considering the perfect immunity of the Neilgherries from all such disturbing influences, as one of the greatest advantages of their position.

We shall now proceed to consider the various conditions of the atmosphere, (in other words, the climate,) in detail, as exhibited under the modifications of pressure, temperature, and moisture; and conclude with a succinct account of the usual succession of seasons.*

* It is necessary to observe that all the succeeding observations, except when otherwise distinguished, apply to Ootacamund only.

Pressure (Barometer). The greater part of the observations in the tables were taken at 10 o'clock A. M., it having been ascertained, by a series of carefully conducted experiments, that the barometer attains its mean daily height at that hour.

The range of the barometer on the hills appears to be considerably greater than in the same latitude at the level of the sea. I have no access to any accurate account of the range on the Malabar Coast, opposite to the hills, but I believe it does not exceed 0·250 of an inch. Now, on an inspection of the annexed meteorological tables, it will be seen, that in January, 1832, the barometer attained the height of 23.375, the maximum of its elevation since my observations began, while in the month of September previous, it had fallen as low as 22·675, (corrected to 32° Fahrt.) shewing an extreme range of 0·700. This range appears, however, to differ annually; being for three years as follows:

For 1831, it was 0·560.
1832, 0·539.
1833, 0·388, giving a mean annual range of 0·495.*

As might have been anticipated, the barometer appears to attain its maximum height in the cold dry weather of January or February, and its minimum during or immediately after the S. W. monsoons. It generally begins to sink gradually about the beginning of April, and continues de-

* Dr. Dalmahoy states the mean range at only 0·245; but as his observations only extend to four months, and mine to upwards of 30, with a very delicate and accurate instrument, I consider my statement as approaching more nearly to accuracy. The same observation applies to all the succeeding meteorological results, in many of which I differ slightly from Dr. Dalmahoy.

scending (but with occasional starts) till August or September, when it again rises gradually, till the cold weather sets in. But here (as is found to be the case elsewhere within the tropics), I have not been able to satisfy myself that any accurate prognostication of the state of the weather is to be deduced from the fluctuations of the mercurial column. I have seen it rise suddenly before or during heavy showers of rain, and sink, equally inexplicably, before a course of fine dry weather. The only agent which appears uniformly to act in the same way upon it is wind, the mercury always rising before or during the prevalence of high wind. I have also occasionally been able to predict wet weather, from observing the top of the column to be flattened, or concave, but not with any degree of certainty.

The daily range of the barometer is very trifling, probably never exceeding ·040 or ·060 of an inch, and seldom greater than ·035; but on this head, as on that of its horary oscillations, I am unable to speak confidently, from want of leisure to make the necessary observations; the horary oscillations occur, as far as I have observed, exactly at the same hours, and in the same succession, as elsewhere all over the globe; but according to Dr. Dalmahoy, only to half the extent observed at Madras, and they are not interrupted during the monsoon, as conjectured by Baron Humboldt.

The mean annual height of the barometer appears to vary considerably, and to have diminished annually for the last three years: this may have depended on the situation of the instrument. The mean of ten months:

in 1831, was 22·933.
Six do. in 1832, „ 23·067.
Eight do. in 1833, „ 23·054. giving as an annual mean

for 24 months in 3 years, 23·018. This is probably near the truth, and Dr. Dalmahoy, in his calculations to determine the height of Ootacamund above the level of the sea, assumes it to be 23·005.

Subjoined are the results in a tabular form:

Mean height of the barometer, ...	23·018
Greatest range, ...	·700
Mean annual range, ...	·495
Probable mean daily range, ...	·040
Greatest daily range, ...	·060

Temperature. The observations from which the subjoined conclusions are drawn, are the fruit of pretty close and continued attention to a number of very good instruments, placed in a situation to be little, if at all, affected by extraneous circumstances, so that they may be depended on as tolerably accurate, particularly for the last nine months, through which they are consecutive.

There are several methods of estimating the mean temperature of a place elevated above the level of the sea. One is, by taking the temperature of copious springs near their sources. Another, by supposing the heat to decrease uniformly at a certain rate, ascending from the level of the sea; and a third, by taking the mean of the observed temperature. This last is of course by much the most accurate, but we shall find that it agrees in a remarkable manner with the other two.

According to the calculation already given, in discussing the effects of elevation on temperature, the mean temperature of Ootacamund should be 52°·28.

There is some discrepancy of opinion as to the correct method of ascertaining the mean observed temperature. The author of the able article, Meteorology, in the Edinburgh

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Encyclopedia, after an elaborate consideration of the various proposed methods, gives the preference to the mean of the daily extremes. According to this calculation, the mean of the daily extremes for 25 months is 58°·68 which we therefore assume as the mean annual temperature of Ootacamund. The next most important consideration is the diurnal range of the thermometer. From what has been stated of the calorific power of the sun's rays, and the contrary effects of radiation of great elevations, we must expect this to be considerable. Accordingly, we find that it occasionally is as much as 24°, (January, 1832,) precisely in the season when the above causes operate most powerfully; and that in July, when they come least into play, it is still 10°. Subjoined is the daily range for nine months of this year, which may be considered as an average season:

January,	20·40		June,	15·59
February,	20·33		July,	10·29 Minimum.
March,	23·33	Maximum.	August,	15·22
April,	19·73		September,	11·73
May,	16·48			

Giving a general mean of 17·01.

The greatest observed annual range (but in different years) appears to be 38° (viz. between 39° and 77°.) The mean *annual* range for part of three years is as follows:

For 1831,	15·20
1832,	18·33
1833.	17·01

It is important to remark, that this range is still betwixt two points, which occur frequently in temperate climates, and is certainly less than what prevails in most of them. The maximum observed is 77 , only 2° above what is assumed as summer heat in England, and the minimum 38° is much

above what frequently occurs even in the mildest parts of Europe.

In stating the observed minimum at 38°, it must be recollected, that the observations were taken at a point raised above the lake, and about half way up the hill bordering the station on the south.

In the valley below, from the combined effects of radiation, evaporation, and the descent of the colder columns of air by their superior weight, which are moreover comparatively undisturbed by the wind, the temperature frequently falls below freezing point, and ice is often found in the dry season half an inch thick. Hoar frost is commonly seen extending half way up the hills on every side, disappearing as the power of the sun's rays gradually increase. The difference is most evident in descending into the lower valleys on a dark clear and still night, when the sudden immersion into the column of air next the ground, cooled by its contact with the radiating earth at the bottom of the valley, strikes one with a sudden chill. As a consequence of the same cause, the lower valleys are frequently filled with a dense fog, while the stratum of air immediately above is perfectly clear and transparent.

So powerful is this effect of radiation from the earth, that a cup of water or milk, placed on the ground, even in the higher situations, instantly freezes, while a thermometer, elevated three feet above it, will only indicate a temperature of 38°, 39°, or 40°. This fact leads to some important conclusions, both as to the situation of houses, and of ground selected for horticultural or agricultural purposes. In a clear bright day, the thermometer generally attains its maximum at about 2 or ½ past 2 P. M., but this is, to the feelings, by no means the hottest part of the day, owing to the constant

current of wind prevailing, from one quarter or another, at that time. About ½ past 8 or 9 A. M. is the time when the sun's rays appear to have most power, the air being then still, and its capacity for heat having been diminished by the increase of density arising from the cold of the succeeding night. This it is important for invalids to observe, as well as the sudden chill produced by the sinking of the sun below the horizon in the evening, when the column of rarefied air next the surface rises aloft, and is rapidly replaced by a colder stratum from above.

The minimum generally occurs about ½ an hour before sunrise, when, as before observed, the lower valleys are generally filled with fog.

During the monsoon season, when the sky is covered with clouds, at once diminishing the power of the sun's rays and obstructing the effect of radiation from the ground, the temperature is remarkably equable, the range seldom exceeding 12° or 14° in the open air, while in rooms, without a fire, it is under 4° or 5°. The thermometer attached to one of my barometers, kept in a small sleeping room without a fire-place, (though the house itself was rather exposed,) during the months of May, June, July, August,* and September, 1831, never fell below 59°·5, nor rose above 62°. This is, therefore, notwithstanding many drawbacks, much the most favorable season for invalids, and should be selected, when a power of choice exists, as the period for ascending the hills.

Photometer. The effects of the radiation of the sun's rays appear to have attained their maximum on the 18th January, when the photometer indicated 126, that is, the calorific effect of the sun's rays was equivalent to 22°·68 Fahrenheit. The minimum appears to have occurred on the 27th August, when the increase of temperature was only equivalent to 9°,

giving a mean of 15°·84. The monthly mean appears hereafter.

The observations on radiation with the æthrioscope are not yet in sufficient number to afford any data from which to draw accurate conclusions.

Moisture. Next to the impressions of temperature on the human body, the most sensible effects are produced by the relative moisture of the air. The laws which regulate this condition of the atmosphere are not yet so accurately investigated as those of pressure and temperature, and it is more difficult to render their operation generally intelligible, from the circumstance of the phrases in common use to express its variation, conveying in many instances ideas in direct opposition to their philosophical meaning. For instance, what is generally called damp or moist air, by no means infers its containing more moisture than another column which gives a feeling of dryness, but only that it is more ready to part with its moisture, from some peculiarity, either in its own constitution or that of the body with which it comes in contact. Without entering into an elaborate disquisition on this somewhat complicated subject, it will be sufficient to observe, that the capacity of air for moisture, in other words, its dryness, depends on its relative density and temperature; rarefied air dissolving more moisture, i. e. being dryer than denser air, and heated air more than cold air; consequently when two columns or strata of air, of different density, or (which is almost a necessary consequence,) different temperature are mixed, the result is almost uniformly a deposition of moisture in the shape of fog or rain, from the capacity of the mixed column of moisture being so much diminished, that it can no longer hold the aggregate quantity of water in solution; the quantity of the

deposit, that is, the heaviness of the shower, being determined by the disproportion between the relative density and temperature of the two strata, and their being each nearly saturated, or not, with miosture. An example will render this more distinct. Let us suppose that a current of air at the temperature of 25° (disregarding density for the sake of brevity,) meets another current of the temperature of 15°, and that both are fully charged with moisture. When mixed, their mean temperature will be 20°. Now, it has been ascertained by experiment that air, (i. e. a cubic mass of it 40 inches each way) at 25° can hold in solution 317·5 grains of moisture, and at 15° 200 grains, the mean of which is 258·75 ; but at the mean temperature of the two currents, viz. at 20°, air can only contain 252 grains ; therefore 8·75 grains must be precipitated either in the form of clouds, fog, or rain. Saturation of the air with moisture, so as to produce deposition on any further diminution of heat, may also be produced by a simple reduction of the temperature of the column below the point at which it can hold its moisture in solution. Thus, a column of air at the temperature of 15° with 180 grains of water in solution, if reduced by any cause to the temperature of 12·8, does not deposit any moisture, being still capable of dissolving 180 grains ; but if a further reduction of 2° take place, a deposition of 35·3 grains ensues.

Upon these simple facts are founded a number of curious experiments and observations, such as the quantity of moisture contained in the air at the time of observation, its dryness or the quantity of moisture required to saturate it, and thirdly, the reduction of temperature required to produce saturation, and consequent deposition, or the dew-point, as it is called.

These phenomena, however, have not yet been sufficiently investigated to lead to any certain practical conclusion, and a very condensed statement of the results is all that is required to prepare us for a consideration of the hygrometric state of the air on the hills, as regards the quantity of rain, and its time of falling.

The air during the month of January, February, and March is intensely dry, the point of saturation, (or temperature to which the air must be reduced to deposit any part of its moisture,) being occasionally as low as 13°, the temperature of the air being 60°. In April, it begins to fluctuate, and in May, the quantity of moisture increases very perceptibly, being accompanied by rapid changes of the electrical condition of the atmosphere, indicated by thunder-storms and heavy showers, but of short duration. During June, July, and August, it is nearly charged with moisture; in September, it is again fluctuating; in October and November, moist; and in December, it begins to re-assume its dry state.

In close connection with the above statement we find, that there is little or no rain in the first three months, some showers in April and May, a good deal of heavy rain at times in June, July, and August; the month of September varies, as does that of October; in November, there are sometimes heavy falls, and in December, the weather again becomes dry. This will be more distinctly seen in the table, in which is given the fall of rain in each month during the greater part of four years, as observed by my friend Dr. Glen, of the Bombay establishment; the mean annual fall, as deduced from this table, is 44·88 inches, or 13·58 inches greater than the mean fall in England, as stated by Mr. Dalton.* The following table will probably be interesting,

* Edinburgh Encyclopedia, Article Meteorology.

particularly to invalids, whose comfort depends so much on the capability of taking exercise: it presents the actual state of the weather for 366 days, from 1st March, 1831, to 29th February, 1832, which, from all I can learn, may be considered an average season:

Number of days of heavy rain, ...	19
Do. occasional showers with fair intervals,......	81
Do. cloudy, ...	28
Do. clear and fine, ...	238
	366

It is moreover satisfactory to be able to state, that on a great majority of the days marked showery, the showers occur at intervals, generally in the afternoon, and that the state of the atmosphere in the morning at least, is generally such as to afford every facility for taking exercise either on foot or horseback.

The course of the seasons is subject to considerable variations, so that it is not easy to give an exact account of them. The following, however, may be considered as a pretty fair statement of their usual succession.

The month of January, is uniformly fair, clear, and dry; the nights are very cold, and it often freezes in the valleys, while in the morning, before the wind has risen, the rays of the sun are very powerful. Towards 10 or 11 A. M., a current of cold air begins to blow from the E. or N. E., and gradually increases to a strong breeze, sharp and intensely cold. The united action of the sun and this wind acts very unpleasantly on the skin, particularly of the face and lips, which it blisters like a frost at home. It is also rather trying to the more delicate classes of invalids, before they

become acclimatized; and such of them as have it in their power, should seek shelter in the milder atmosphere of Kotergherry or Coonoor. To those in restored health or whose convalescence is somewhat advanced, its effects are bracing, tonic, and exhilarating in the highest degree.

Mean pressure in Jan.	23·134	Mean of photometer,...	118·5=21°·73
Mean temperature, ...	53°·10	Mean fall of rain, ...	none.
Mean do. of the day,...	59°·72	Mean dryness of air,...	119·2
Mean daily range, ...	20°·4	Mean quantity of moisture,	79·2

The same remarks will apply to February, except that the frost is stronger during the nights, and the wind less violent during the day. The valleys are covered with hoar frost, and the herbage, from the united effects of congealation, and the heat radiated by the sun, becomes parched and brown. The sky is cloudless, and the nights brilliant and clear beyond description.

Mean pressure in Feb.	23·004	Mean of photometer,...	117·6=21·16
Mean temperature, ...	56°	Mean fall of rain, ...	0·47 inches
Mean do. of day, ...	62°	Mean dryness of air,...	121·3
Mean daily range, ...	20° 33	Mean quantity of moisture,	95·5

Towards the end of March, the frost disappears, the weather gets gradually milder, and there are generally a few heavy showers.

Mean pressure in March,	23·167	Mean of photometer,...	101·6=18·83
Mean temperature, ...	62°	Mean fall of rain, ...	1·02 inches.
Mean do. of day, ...	69°	Mean dryness of air, ...	218·4
Mean daily range,.........	23°·33	Mean quantity of moisture,	44·1

In April, the weather assumes quite the feeling of spring in the more temperate parts of Europe; there are frequent showers, followed by bright sunshine; the air is mild and balmy, and vegetation, hitherto kept in check by the frost, springs up rapidly and luxuriantly. Towards the close of

the month, the wind hitherto steady from the N. E. begins to be variable, and finally settles in the S. W.

Mean pressure in April,...	23·109	Mean of photometer,	82°·66=14·85
Mean temperature, ...	63°	Mean fall of rain, ...	4·00 inches
Mean do. of the day, ...	68°	Mean dryness of the air,	144·7
Mean daily range, ...	19°·73	Mean quantity of moist.	108·4

May is our warmest month, and occasionally before rain there is a feeling of closeness in the air, which is also frequently obscured with clouds gradually becoming denser and heavier. Heavy thunder-storms generally usher in the monsoon, which sets in at the end of this month, or beginning of the next; the rain, however, which falls is very partial, often descending in torrents, intermingled with hail, at one side of the cantonment, while it is perfectly fair at the other. It is, however, upon the whole, a delightful month, and the robe of verdure which covers the hills, with the fresh green of the foliage in the forests, adds much to the beauty of the scenery.

Mean pressure in May, ..	23·018	Mean of photometer,	72·26=13·06
Mean temperature, ...	62°	Mean fall of rain, ..	6·50 inches.
Mean do. of day,........	66°·38	Mean dryness of air,	82
Mean daily range, ...	16°·48	Mean quantity of moist.	157

On the setting in of the S. W. monsoon, which generally occurs early in June, (following the course of the Malabar monsoons, only that it is 10 days or a fortnight later,) a heavy bank of cloud settles itself on the Koondahs and Neddimulla hills, from which detachments, as it were, are sent off towards the central range, enveloping every thing in a dense fog, with occasional showers of light driving rain.

The rain is, however, by no means constant, and seldom lasts for more than two or three days at a time, the intervals being very agreeable, from the perfect equability of tempera-

ture. The only drawback to exercise is the slippery nature of the soil, which renders the roads unsafe for a short time after the showers have fallen; the rapidity with which they dry, however, is extraordinary, and it is rare for an invalid to have his exercise interrupted for more than a day or two at a time.

Mean pressure in June, ..	23·015	Mean of photometer,	64·04=11°·52
Mean temperature, ...	60°·18	Mean fall of rain, ..	6·50 inches.
Mean do. of the day, ...	63°·82	Mean dryness of the air,	57·8
Mean daily range, ...	15°·59	Mean quantity of moist.	167·23

The monsoon continues with greater or less constancy throughout July and August; but fortunately for those who suffer from the damp, or the occasional deprivation of exercise, the weather, at this period, is comparatively dry and fine at both Coonoor and Kotergherry: the brightness of the weather at these places, being only occasionally interrupted by a passing shower. In fact the monsoon appears to expend its violence on the Koondahs, and the other hills bordering the table-land on the west, where it rains pretty constantly, attended with violent gusts of wind, the rain becoming less and less heavy as you approach the central range; on passing which you are suddenly transported into another clime, with bright clear sunshine, and a soft mild temperature. And it must be held one of the great advantages of our position that you can thus, by shifting your quarters only 16 miles, almost entirely beguile the only unpleasant weather an invalid has to dread.

Mean pressure in July,	22·944	Mean of photometer, ..	53·57=10°·71
Mean temperature, ..	58°·77	Mean fall of rain, ...	4·27 inches.
Mean do. of the day, .	58°·2	Mean dryness of the air,	49·7
Mean daily range, ...	10°·29	Mean quantity of moist.	150·3

Mean pressure in Aug.	23·015	Mean of photometer, ..	65·06=11°·71
Mean temperature, ..	58°·6	Mean fall of rain, ...	4·00 inches.
Mean do. of the day, .	62°·7	Mean dryness of the air,	69·8
Mean daily range, ...	15°·22	Mean quantity of moist.	129

September, and October, are uncertain months—if the S. W. monsoon has begun early, and exhausted itself, they are fine, warm and pleasant; but if there has been any deficiency in the previous falls of rain, there is generally a good deal of fog, and drizzling rain

Towards the end of September, the wind again shifts round to the north, and it becomes sensibly colder.

Mean pressure in Sept.	22·785	Mean pressure in October,	23·056
Mean temperature, ..	56°·5	Mean temperature, ...	58°
Mean fall of rain, ...	6·36 in.	Mean fall of rain, ...	6·51 inches.

November, all over the northern hemisphere, is an unpleasant month; but, with the exception of a few heavy bursts of rain from the N. E. monsoon, then prevailing at Kotergherry, and the N. E. parts of the range, it is generally dry and equable.

Mean pressure in November, ...	23·070
Mean temperature, ...	56°
Mean fall of rain, ...	3·52 in.

In the early part of December, there are some foggy days, and, occasionally, heavy showers, at the winding up of the monsoons, but the middle, and end of the month, are almost always cold, clear, and fine.

Mean pressure in December, ...	23·174
Mean temperature, ...	52°·50
Mean fall of rain, ...	1·73 in.

Such is, what I believe to be, a fair resumé of the climate and seasons of Ootacamund; and, after considerable experience of the climate of almost every country in Europe, and some

few in Asia, I can safely say, that there is not one, in which there is more to praise, or less to blame; none in which less inconvenience is suffered, from extremes of heat or cold, moisture or dryness; in short, none in which I could more easily make up my mind to pass the evening of my days, than the lofty regions of the Neilgherries, could I forget the ties of home and country.

The CLIMATES OF "COONOOR," KOTERGHERRY, AND JACKATALLA, have been fully described, in the accounts of those stations.

The editor has been favored with the following remarks by his friend Professor Oldham, after a careful examination by him of Dr. Baikie's, and Mr. Ross' Meteorological Tables, abstracts of which are given in the appendix, and these remarks, and some others that follow on the different climates of the hills, will, not inaptly, be introduced here.

Professor Oldham observes;

"It is much to the regretted that there is no means of ascertaining the degree of accuracy, with which the observations of Dr. Baikie and Mr. Ross may be trusted. They were, as will be seen, taken by different observers, with different instruments, and at an interval of twenty years. That they are not strictly comparable, is therefore obvious; and to any one who knows the very great defects, which, almost invariably, accompanied maximum and minimum Thermometers, until within the last five years, the sources of error will be evident.

"Notwithstanding all these causes of error, the observations may perhaps be taken, as about relatively equal in value, and some interesting results appear to be fully established by them.

"One of the first questions of interest, in comparing observations after such an interval, would be, to trace the occurrence of any marked change in the mean temperature, at the place of observation. For the causes we have mentioned, these observations are not sufficient to prove this fact. From a comparison of the whole series, (supposing them of equal value), there would appear to have been, a diminution of the mean maximum temperature by more than five degrees, accompanied by a slight decrease, also, in the mean minimum temperature, (not more than 1°.) But these are quite within the limits of error of the observations.

"Disregarding minor differences, the most striking fact, proved by the concurrence of all the observations, is, *the very remarkable equability* of the climate at Ootacamund. The peculiar position of that station, placed at a considerable elevation between two great seas, and subject therefore to the equalizing influence of both, the Bay of Bengal on one side, and the Indian Ocean on the other, would, *a priori*, have led us to anticipate, that the climatal conditions would be insular, rather than continental, that the extremes would be moderated, and, that the great variations, observable in other places, within the intertropical limits, would be less marked here, and these observations fully confirm this view.

"The range of the temperature of the air, during the hottest hours of the day, or at its maximum, throughout the whole year, appears to be, not quite 9 degrees, at the coldest hours of the night; or, at the minimum, only 9°·15 degrees; that is, the hottest hours of the day, whether in summer or in the depth of winter, do not vary more than nine degrees. The extreme variation from the hottest *day* temperature, to the coldest *night* temperature, during the whole year, (average of 7 years) was only 21°·25.

"The hottest months of the year are March, April and May; the coldest months December, January and February.

"The extreme average range, between day and night temperature, was, about the same as the extreme annual range, or 21·150. The mean daily range for the whole year (from 7 years' observation), was 16° 17 degrees.*

"The observations, however deficient in extreme accuracy, separately, all concur in their results, and they may therefore be admitted as tolerably well established."

The following observations on all the tables in the appendix, taken together, will be read with interest.

"From the tables of temperature on the hills, it will appear, that the mean temperature of the year, the mean maximum, and mean minimum, bear about the same relation to each other, as in England, but are about 10° degrees higher, while the daily range is somewhat less. The highest observed temperature, and the lowest in England, are greatly above and below, respectively, the corresponding points on the Neilgherries, that is to say, the extremes are greater.

"The power of the sun's rays, another most important point in estimating the effects of exposure, is, also, considerably less

* As far as published observations enable a comparison, the following gives the extreme ranges of the mean monthly temperature of several Indian Hill Stations.

Simla	elevation 8000	from	40°	to 80·9	or a range of	40°·9
Nainee Tal,	„ 6200	„	42·1	to 69·6	„	27°·5
Dugshai,	„ 6000	„	42·00	to 72·00	„	30°·00
Kussowlie,	„ 6400	„	42·00	to 77·20	„	35°·20
Darjeeling,	„ 7000	„	40·90	to 61·30	„	23°·40
Cherra Poongee,	4200	„	53·70	to 72·10	„	18°·70
Ootacamund	„ 7400	„	51·26	to 60·33	„	9°·07.

on the Neilgherries than in England, the maximum and mean being both lower.

"To sum up, the climate of the Neilgherries is more temperate than that of Great Britain, its whole range being also within the limits, considered, by all authorities, most favorable to the European constitution.

"The number of days in which rain falls in England, (exclusive of snow), greatly exceeds the corresponding number on the hills, there being only 160 fair days, in the one case, and 237 in the other; which is important, as shewing, that, although the quantity of rain is nearly double, the opportunities for taking exercise are more frequent in the proportion of 24 to 16, or 1-3rd.

"There is also a greater equability of temperature, the daily range being less than in England, and the extremes much lower, viz. 77°, and 38°, on the hills, instead of 90°, and 11°, in England.

The Editor has also been obligingly favoured with the following observations, on the climate of the Hills generally, in a letter addressed to him by Dr. A. Grant, of the Bengal Medical Service, who was the personal Surgeon of the Marquis of Dalhousie, and accompanied his Lordship to the Neilgherries in 1855, and which the Editor introduces here, as a valuable adjunct to Dr. Baikie's remarks; confirmatory, as they are, of all that the latter has advanced. The opinion of such an authority, will give the greater confidence to intending visitors from this side of India, where Dr. Grant is so well known, and his professional character so highly appreciated.

"Your list of memoirs, and works of reference, is the most complete I have seen; and as your narrative will be drawn,

not only from these sources of information, but from personal observation, and official documents, I have no doubt the public will have something practically useful. The want is much felt. When about to proceed to the Neilgherries, last year, I could get but conflicting opinions regarding the routes, accommodation, climate, &c. and no copy of Baikie was procurable at any of the Book-sellers.

"It is surprising, that the advantages of the Blue Mountains should have been so long overlooked, in a country where European health is so precarious, and the necessity of a change to a cool climate, is, so frequently, and so urgently called for: in Bengal, they have scarcely attracted attention, otherwise, how many invalids might have been saved a trip to Australia, or the Cape, or even to England.

"You wish for some remarks on "Kotergherry" and "Coonoor." I would observe, that these are the fittest for many classes of patients, on *first* ascending the hills, and this adaptation of different stations, in the Neilgherries, to different diseases, and to different stages of the same disease, is a great advantage: they have also an atmosphere more completely oceanic, than that of any other mountain range, which renders them beneficial for a large class of invalids.

"Those, capable of taking exercise in the open air, are in the condition to derive the greatest advantage from the climate, hence, the impropriety of sending patients, in an advanced stage of disease, for they rarely do well. It is not so much the *nature* of the disease, as the *stage* of it, that is to be considered.

"In the second year of residence, the invalid may try the more elevated, and bracing regions about Ootacamund.

"The situation of Coonoor is rather confined, but it is a pleasant, retired, and pretty summer residence, well shel-

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tered from the S. W. monsoon, and easily accessible: there is a great variety of beautiful rides, and one excellent carriage drive, and the scenery presents an assemblage of wood, rocks, water, and ravines, singularly picturesque.

"The climate is very mild, and rather humid, consequently, relaxing, but soothing, and best adapted for old Indians, with whom a soft and mild climate agrees best. It is most favorable for cases requiring, simply, a reduced atmospheric temperature. The mild soft air is good in bronchitic affections, and in incipient pulmonary consumption. If the liver be affected, or there is bowel-complaint, the first season should be spent at Coonoor, the humid cold of Ootacamund being prejudicial. The mild and equable climate of Coonoor, also, improves the general health in rheumatism; and affords a prospect of recovery, after the failure of all other means. Asthmatic cases, which bear an elevated situation, often do well here. Delicate, and sickly children, are often sent from Ootacamund to Coonoor, and with good effect.

"Kotergherry presents a medium climate between Coonoor, and Ootacamund, and, judging from my own observation and personal enquiries, it is the best of the three, when a selection of *one* is to be made.

"The extreme, and daily average range of the Thermometer, is less than at Ootacamund, and the nights are not so cold. During the summer months of 1855, my Thermometer, in the shade, used to range from 62° to 65° at Kotergherry; and from 65° to 70° at Coonoor.

"There was, occasionally, heavy rain, but, upon the whole, the station is well sheltered from the S. W. monsoon, while the soil is so porous, and the drainage so excellent, that no water lodges; and the air is not long charged with moisture. There is less deprivation of exercise than at Ootacamund,

and, if the climate is not so bracing and invigorating, it wants the cold sharpness of the more elevated locality.

"The scenery at Kotergherry, is tame, and altogether less grand than Ootacamund, but it possesses much beauty, where it borders, and overhangs the plains: there is a want of trees, the hills being either covered with grass, or a low bushy jungle, where they are not cultivated.

"The great drawback to the station is, the want of a resident Medical Officer, and a good bazar, there being only one market-day weekly.

"It is to be observed, also, that the limited accommodation at Coonoor, and Kotergherry, has much prevented their being resorted to by invalids, but each will soon be improved in this respect.

"For pale, and weak children, the climate of Kotergherry is well suited, especially when they are growing rapidly—they can be much in the open air, and soon gain strength. It is also well adapted for women, whose systems are much relaxed, and feel the severity of the moist cold of Ootacamund.

"Kotergherry, is much preferable to Ootacamund for persons who have been long subject to the oppressive and relaxing heat of Bengal; who suffer from dyspepsia, constipation, and weak health, arising from too much, and long continued mental exertion, and the cares and anxieties of official life.

"I may add one other advantage that the Bengal invalid has, in proceeding to Madras—and that is, the medium climate of Bangalore, where he may make a short stay, with much benefit."

CHAPTER VI.

GEOLOGICAL FORMATION.*

My acquaintance with the science of Geology, is so slight, that I have little information to give on this head. The formation of the whole range is decidedly primitive, consisting, almost wholly, of sienite. Numerous nodules of a species of conglomerate, approaching to what is known, on the Malabar coast, as laterite, or soap-stone, are found in the vicinity of Ootacamund, and Kotergherry; and in several spots, betwixt the latter place and Coonoor, there are indications of large beds of this substance. My lamented friend Dr. Christie, pointed out to me several considerable beds of a whitish earth, which is used for white-washing, and which he considered, to be decomposed felspar, nearly approaching to the famous porcelain earth of Limoges. Quartz, in a state of considerable purity, but partially decomposed, is also found in great quantity, in detached blocks, near the Koondah Ghât, and below Billyeull.

The sienite, composing the basis of most of the rocks, is of a very hard description, and, but for the difficulty of working

* For the fullest information on the Geological formation of the hills, generally, see Capt. Ouchterlony's Memoir, and the several other Memoirs and reports noticed in the list of publications, which concludes the appendix.—Ed.

it, would be a valuable building material, in situations where durability is a desirable requisite. Many portions of it contain crystals of garnet, and iron is very abundant in many places, though I have not observed any specimens deserving the name of ore. It would appear, that gold is contained in many of the rocks on the western side, as all the streams, descending into the great valley of Nellumboor, carry down detritus containing sensible portions of gold dust, which is washed out by the poorer natives in that quarter. An officer was formerly appointed to examine this valley, with the view of ascertaining, the probability of working mines regularly, with advantage to Government.

Subsequent observations, and experiments have shown, that, except by slave-labour, in the hands of natives of property and power, no good has resulted from the washing of the detritus. No lime has been found on any part of the hills, and the clay, in general found, is not well suited to the manufacture of bricks, tiles, or pottery, though this arises from want of skill on the part of the manufacturers, as very good bricks and tiles are now produced, in considerable quantity, at many places on the hills, when superintended by Europeans.

The water found on the hills is occasionally hard, and sometimes contains iron, but there is no want of springs of beautifully soft water.

CHAPTER VII.

SOIL AND PRODUCTIONS.*

THE soil, over the whole extent of the table-land, is, nearly without exception, of the richest description, but many circumstances of situation, exposure, command of water, and others, less obvious perhaps, have contributed to confine the cultivation to the slopes next the extreme range of the hills, on the S. and E. sides of the range.† The country, for some miles in the segment of a circle, commencing at Mailcoondah, at the base of the Koondahs, continued through Coonoor, Kotergherry, and the Orange Valley, to Billycull, is almost entirely occupied by the villages of the Boodigahs and Kothurs, each village being generally placed on a small hill, or slight slope, surrounded with numerous patches of cultivation, which are kept remarkably clean, and free from weeds; they are protected, in the proper season, by deep ditches, and hedges formed by boughs or small sticks, from the depredations of the elk, hog, porcupine, and other wild animals. The villages themselves, generally, consist of a single row of houses, with a low, very broad pent roof, carefully thatched, and a considerable space, in front of them, is provided with a bed of

* For a most minute, and comprehensive account of the soil and productions of the hills, see the valuable Memoir of Captain Ouchterlony, from which extracts are given in the appendix.

† Since Dr. Baikie's time, the cultivation has spread over various other quarters.

hardened clay, beat smoothly down, so as to form a sort of barn-floor for threshing, cleaning, and winnowing the grain.

The most ordinary articles of cultivation are :

Wheat, barley, and oats, in considerable quantities. A sort of small grain, called Keeree-mow,* growing on a thick fleshy stalk, the head, containing the grain, being, when ripe, of a blood-red or bright crimson colour, and closely resembling the plant, called in Europe, prince's feather, or "Love lies bleeding." This grain, when ground into meal, the Boodigahs appear peculiarly fond of; it is usually eaten raw; sometimes the seed is broiled, and ground into flour, mixed with a little cold water, occasionally with milk, and appears to form the staple article of their subsistence.

Poppies, are cultivated in considerable quantity, and the old men are rather addicted to the use of opium, procured from them.

Garlick and onions are continually cultivated for sale: the onions, though small, are mild, and pleasant to the taste.

Fruits, and an immense variety of vegetables have been introduced by the European visitants. And almost every description of esculent vegetable, to be found in Europe, is now cultivated on the Hills in abundance. The list extends to potatoes in great quantity, and first-rate quality ; cabbage, cauliflower, savoys, French beans, spinage, peas, lettuces, beetroot, radishes, celery, turnips, carrots, Sea-kale, asparagus, and tomatas.

Fruits, do not ripen well at Ootacamund ; but at Coonoor, Kotergherry, Jackatalla, Dimhutty, Billycull, and Orange Valley, oranges, plums, peaches, nectarines, apples, pears, citrons and loquats are, as has been before particularly mentioned.

* Amaranthus tristis.

Of the wild products of the hills, the most remarkable are the Brazil cherry, known in Bengal as the Topara, growing in a curious leafy case, on a small prickly shrub: the fruit when ripe is of the size of a cherry, of a yellow colour, and an agreeable subacid taste; it is found in immense profusion.

The hill gooseberry, so named from its strong resemblance in taste, though not in appearance, to a ripe gooseberry; it grows in prodigious quantities on a small branchy shrub, with short thick dark-green leaves, and makes an excellent preserve.

A small green fruit, very much resembling, in appearance and flavour, a caper, is used by the burghers as a sort of pickle.

Strawberries, and raspberries, are in great abundance. The latter, in certain situations, is uncommonly well flavored. Black, or bramble berries, are also very common.

The Orchis Mascula, from the root of which the well known Salepi Misree is obtained, is found in considerable quantities on the Neddimulla Hills, and near Neddiwuttum. Several other plants, resembling the genus Orchis, and with roots of the same description, are found in and about Ootacamund.

Of forest trees, there are an immense abundance, and variety, many doubtless valuable, but very few of them have, as yet, been turned to any account.

The camphor tree, according to Baron Hugel, is to be found near Orange Valley—if in any quantity, it must prove valuable.

A considerable forest of Teak, was discovered in the Coonoor Ghát, and was reserved for the use of Government, but has since been worked out.

The Chumpanee, a small tree with crooked stem, and long

lanceolate leaves, disposed in bunches, furnishes, when seasoned, a very hard, tough, and solid wood, of a bluish white colour, with deep blue streaks; it appears to possess all the valuable qualities of teak, and is commonly used for rafters, door-frames, bitels, and other similar purposes; it is unfortunately not very common.

The Darchenee, or bastard cinnamon, which is very common, and grows to a large size, furnishes a great quantity of very useful wood, though not equal in strength or durability to the last; it is of a pink or pale reddish colour, and may be had in beams of any size.

A third species, known to the natives by the name of Billoo, furnishes a wood of a deep red colour, very heavy and solid, but easily worked; it is said to be less affected by moisture than either of the two former, and proof against insects.

The barberry, which is sufficiently common, produces a wood of a rich golden yellow colour, which takes a good polish, and though only found in small stems, would be very well adapted for ornamental furniture, such as chairs, music-stands, &c. the bark of the root is thought to be the base of "Warburg's fever drops."

As intimately connected with this subject, a few observations on the capabilities of the hills may not be misapplied.

Every description of European vegetables, fruit, and grain, are advantageously cultivated on the hills. Potatoes in any quantity; oats for feeding horses; barley for brewing* beer,

* No hops have yet been discovered on the hills, but I have seen them growing wild in immense abundance, in a soil and climate nearly analogous, in the province of Kakhetia in Georgia. See extract from Captain Ouchterlony's Memoir as to his successful experiments in making Beer.—Ed.

or distilling; Mangel-wurzel, and turnips for feeding cattle, and all other vegetables.

→ Coffee is cultivated on the slopes of the valleys, and, to a great extent, about Coonoor and Kotergherry, and even more near to Neddiwuttum to the West—from one plantation, in that quarter, 600 acres produced 250 tons of Coffee, which, in 1856, sold in the London market for 70s. the cwt. and some for 78s.

Baron Hügel found, in considerable abundance, near Coonoor, the Camellia Japonica, which is said to affect the same soil, climate, and exposure, as some of the more valuable descriptions of the tea-plant, from which, and other circumstances, he inferred, that the latter might be cultivated with advantage. My friend the late Dr. Christie, had come to the same conclusion, and commissioned some plants from China, some of which came into my possession after his death, and have been distributed to various parts of the hills for trial. It is now cultivated at Coonoor, and even near Ootacamund, but sufficient attention has not been bestowed upon it at any place.

Lucerne, and Fiorin grass, and Italian rye and other grasses imported by Mr. McIvor, thrive remarkably well.

Tobacco, of a very superior description (said to have been sown by a Todar) was discovered by two gentlemen of my acquaintance (Messrs. Ashton and Stephenson) on a small hill not far from Ootacamund.

If a proper selection of ground were made at Dimhutty, Orange Valley or Billycull, and walls or espaliers erected, fruit of any kind, and in almost any quantity might be raised. As now at Jackatalla by Dr. Macbeth, and at Coonoor by General Kennett, Mr. Davison and others.

The cultivation of medicinal plants, such as rhubarb, Co-

nium maculatum, Hyoscyamus niger, &c. would undoubtedly be highly advantageous. The simple apparatus, described in Arnot's Physics for Evaporation *sub vacuo*, might be adopted with great advantage, for preparing the extracts of these and similar other plants, now procured at great expense from Europe.

It appears extraordinary, that no enterprising individual has thought of curing salt-provisions, on a large scale, on the hills. The climate is undoubtedly favorable, and the circumstance of water-carriage being within 28 miles of the Koondahs by the new pass and especially the extension of the rail-roads, would facilitate the procuring the necessary quantity of salt, as well as exporting the manufactured article. Hams, tongues, briskets, humps, bacon, &c. of very good quality, cured on the hills, are sold in considerable quantity in the bazar, as well as prepared in private families, for home consumption; but it would require the assistance of experienced persons to conduct it on a large scale. The animals, (cattle and swine), might be procured, in any quantity, in the low country round the hills, and might be at first driven up as required, until a proper breeding and grazing establishment were formed.

I am hardly sufficient master of the subject to say whether the breeding of horses might be advantageously pursued. Even under the most favourable circumstances, this is a precarious speculation; but judging from the temper, spirits, and condition of those which have been imported, they thrive to admiration.

Breeding cattle and sheep, is liable to the same objection of uncertainty, but not to an equal extent, as the very fine breed of buffaloes, found on the hills, is a proof that they can be naturalized; European sheep, require much care at first,

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to preserve them from the wet, but after a short acclimatisation, thrive very well. The use of salt, mixed with their food, is found to be an admirable preservative against the moisture of the climate.

The late Dr. Christie, had made preparations for manufacturing ice on a large scale, storing it, and afterwards conveying it to Madras, Bombay, and Calcutta. His calculation was founded on the supposition, of a certain quantity being equivalent to so much saltpetre, in cooling wine, beer, &c. and he expected to sell this equivalent quantity, at two-thirds of the price of the saltpetre, and, all expences paid, to realise a profit of 15 per cent. If ice sent from America to Bengal, returns a profit, it appears almost certain that such a speculation, on the Neilgherries, could not fail of success.

The above-mentioned speculations present only a question of probable profit or loss to the individuals undertaking them; but there are many other points, connected with the capabilities of the hills, which involve considerations of great moral, and political importance. To these I shall do no more than allude, in the hope that the subject may be taken up by those who are better qualified to do it justice.

To say nothing of the eligibility of this climate and position for the location of European troops,* and the instruction of European recruits, it has occurred to many of our more intelligent visitors, that a considerable portion of the daily increasing Indo-British population might be, with ad-

* Since Dr. Baikie wrote, Jackatalla has been established as a Military Station. In the appendix is given an extract from the Calcutta Review of Sept. 1851, "On the mortality of European soldiers in India," a subject to which the attention of the Governments, and the Commanders-in-Chief in India cannot be too often drawn.—Ed.

vantage, disposed of on the hills, where their intelligence and activity might be turned to account in a variety of ways, for which there is little or no scope in the low country.

In the various discussions, which have lately been entered into, on the difficult subject of colonization of Europeans in India, it has been frequently stated as an objection, that the climate is unfavorable to the exertion of skill and enterprise, from its physical effects on the European constitution. It appears to my humble judgment, that as regards the south of India, at least, this objection might be got over, by the colonists establishing their head-quarters on the hills, to which they might retreat for repose and refreshment, when their presence was not required in the low country—and where their families at least would enjoy an European climate, and the benefit of an English education.*

The location of pensioners on the hills is attended with many difficulties. The habits of this class of men are not the best in the world, and but rarely offer an example of industry, or sobriety, while the effects of their long residence in the low country, added to their (generally) advanced age, render them, in most instances, insensible to the advantages of the change.

* See Prospectus of different Schools, in the Appendix.

CHAPTER VIII.

BOTANY.

The Botanical productions of the hills are of the richest and most varied description, but they are a field, in a great degree unexplored. From the peculiar nature of the climate, and their position betwixt a tropical and temperate zone, they partake of the advantages of both; and plants of the most opposite descriptions, from the luxuriant produce of a rich soil, under the influence of a tropical sun, up to the small Alpine shrub, which niches itself in an angle of the bare rock, all may be found in the compass of a single day's journey. Another difficulty in the way of a collector, whose leisure does not admit of his passing a considerable time on the hills, is, that there are plants coming into flower every month of the year, and it would require the labour of many seasons, added to indefatigable industry, to exhaust the Flóra.

In the Appendix will be found a catalogue of plants examined by my friend the Reverend Mr. Schmid, extending to upwards of 400 new species.

The following observations, on the general character of the vegetation, are from the pen of my friend Baron Hügel, an officer of the Imperial Austrian Army, who has travelled very extensively over all Europe, and great part of Asia, in the pursuit of Botanical knowledge, and who paid the hills a

hurried visit. It is much to be regretted, that his ulterior plans did not admit of his making a longer stay, as he found much to interest him, and we had reason to expect some valuable information, on the capabilities of the hills, from this talented individual, who, to a profound knowledge of the technicology of Botany, unites an intimate acquaintance with the practical application of the science to Horticulture, and all other useful purposes.

"Having been only a few weeks on the Neilgherry Hills, although during that time I traversed them in all directions, I should not be able to give an account of the hill country I have explored, without the kindness of the Rev. B. Schmid, who, having resided at Ootacamund a long time, has put his Herbarium at my disposal. Unfortunately, the greatest part of the plants being new, or described only of late, more time and books would have been required than a traveller possesses, in order to pronounce on their species, without the risk of exposing myself. The following pages contain therefore only general remarks on the vegetation, and families of plants:

"In every part of the globe, the vegetation, considered as a 'tout ensemble,' has its peculiar characters, or, as I would say, physiognomy, which usually changes only at great intervals, and one part of the features of which forms a portion of the physiognomy of the next. Thus we see some species, remarkable for their size, even in Norway, and in the uttermost northern boundaries of vegetation, form a part of that of the centre of Europe; whilst the plants, which most frequently inhabit these woods, are found in the north of Italy, and some of them even both in Italy and in Sicily, countries which, notwithstanding, differ from each other infinitely in their physiognomy.

"The same is the case, and even in a higher degree, with respect to tropical countries; the plants change more according to the soil, and the earth on which they grow, than according to the distance. To prove this, I would mention India, in which country, wherever the same soil is found, one may be sure to find, not only the same families, but also the same species. I forbear mentioning instances, as they would prove too numerous. The high mountains, throughout the globe, possess a vegetation entirely different from that of the low country, and even from that of the lower mountains; but which present every where not only the same species, but often the same families, and always the same forms.

"It was very interesting to me to examine the Neilgherry Hills, which perhaps cannot be classed among the Alps of our globe, but which have a vegetation quite Alpine, embellished, and enlarged by the tropical sun, and the perpendicular beams of light; nearly all the forms of plants of the European Alps, with few exceptions, are *found also* here. A great number of families, and genera are similar, but not one single species, which I had occasion to observe, is the same, with the exception perhaps of Viola canina, which might be one of those subvariations, as Viola canina, Alpina, Pyreniana, neglecta, &c. which I have not sufficiently compared. Berberis, so similar to B. communis, differs from it; it is perhaps B. vulgaris Nigra, of the Levant. Most other plants, as Bubus fruticosus, Fragaria silvestris, &c. have been called so, by persons who suffered themselves to be deceived by a superficial (slight) resemblance.

"It would be very difficult for me, without an Herbarium without books, and even engravings, to speak positively, and to state, that the Neilgherries have no species in common with any other part of the globe. For instance, I think the

Mahonia D. C. which grows there, is the Fascicularis of America, &c.; but the difference in the physiognomy of vegetation is as great, as between that of Tornæa in Sweden, and that of Naples.

"The family of the Compositæ, is pretty numerous in the Neilgherries, as is the case on all high mountains, particularly the genus *Gnaphalium*; the family of the Friceæ veræ, is found only in those genera which approach nearest to Vaccinium; some species of Ranuncularia: two of Clematis; one Magnoliaceæ, (I think of the subdivision of Michelia, but not Champaca;) some fine species of the Cruciferæ: I can only say, that with regard to all these, the plants which I had it in my power to examine, and compare, are different from similar species found elsewhere.

"A remarkable conformity exists between the Neilgherry plants and those of the table-land, and on the mountains of Newera Ellia in Ceylon: this last place has many species entirely the same with those of the Neilgherries; many are but subvariations of the same species, that is, Rhododendron Arboreum differs but little; the Corolla is always of one colour, a deep red without the least spot.

"Ficarræ, none;* Umbelliferæ, some splendid species; Caprifoliaceæ, some species: two Gentianeæ, one of them with a beautiful blue flower, Exacum bicolor? Bignonia in the valleys, a beautiful species. Instead of the Cistineæ of our mountains, we have here beautiful Melastomacea, which crown the highest mountains. Drosera, one†; Malvacea some species; Geraniaceæ, none‡; some species are found on Newera Ellia; Hypericea, three. The Leguminosa are not

* One in Orange Valley since found. (S.)

† About Ootacamund we have two. (S.)

‡ One common about Ootacamund. (S.)

numerous, and the genus Crotaleria, so abundant in India, producing here colossal plants, comprehends two-thirds of all the Leguminosa. A fine species of Rosa, with large white* flowers. One Passiflora; beautiful Cucurbitaceæ; a beautiful species of the Crassulacea. A colossal species of Solanum; some species of Labiatæ; a few Verbenacea, and Euphorbiaceæ. Of the Urtica family, only one, but in several beautiful varieties. None of the Coniferæ; One Salix; some beautiful and well distinguished Orchidea, bulbous. No Amaryllideæ. Few Asphodeliæ. One Tulipaceæ. A beautiful Lilium, with one flower; several species of the Commelinea.

"The season being unfavourable for the Graminæ, when I was on the Neilgherries, I can say nothing of them; but, on the contrary, nothing can be finer than the Filices, the species of which are endless, from the fern *tree* to the smallest plants. Fungi do not exist at all here.†

"To come back to the physiognomy of the vegetation, it is beautiful, smiling, flourishing; its expression is that of health, of a reproductive vigour, which, strong as it is, remains always noble, and elegant.

"Having descended the Neilgherries on all sides, as far as the tropical regions, I have found a very singular thing, viz. a middle region between the Neilgherry Hills, and the usual vegetation of Malabar, or Mysore, and which takes the place of our Sub-Alpine vegetation; I have found there several magnificent plants often of colossal size, and which vary greatly in the different passes of Goodaloor, of Kotergherry (or Orange Valley), Coonoor, and Koondah; in short,

* A fine red species also.

† Baron Hügel saw none, at the season he was here, but they are common at other times of the year.

the Botanist finds in this wonderful country, attractions which few other parts of the earth can offer him, and which a delightful climate permits of his procuring, at the expence of excursions which would be fatiguing even in Europe, but which here only add to his enjoyment."

CHAPTER IX.

ZOOLOGY.

THIS branch of natural history, as illustrated on the hills, offers several peculiarities to the lover of the science, but my limited opportunities, and want of leisure to collect and observe, prevent me from offering more than a very rough sketch of the Fauna Neilgherriensis.

Of the larger animals, The Elephant, though numerous in the surrounding jungle, and occasionally seen in the passes, is not found on the table-land.

The royal Tiger is an occasional visitant, and is, as usual, destructive, but they seem to lose part of their ferocity in this cold climate, and in general fall an easy prey to the sportsman.

Cheetas are more numerous.

Jackals are very numerous, and wild dogs* not uncommon; neither wolves nor foxes are met with.

An animal, nearly resembling the Martin, is sometimes seen; as also the Polecat.

* I am informed by competent judges, that the animal, so called on the hills, is not a genuine wild dog, but a sort of nondescript, partaking of the dog, the wolf, and the fox, all of which it resembles in one or more points. They are frequently seen hunting elks, deer, &c. in packs of 8, 10, or 12.

Bears of a large black species are frequently met with; they appear harmless, though sufficiently fierce when wounded, or otherwise roused. They are most common in the early part of the monsoon, when they ascend in pursuit of a large brown beetle, then very numerous; they also feed on roots, and the ground is often turned up by them to a considerable extent.

Under the head of Game, may be classed the following:

Wild Hogs, at certain seasons, to be met with in plenty, but neither so fat nor so well flavored as the sugar-cane hog of the low country.

The Samber or Elk, as it is universally called, though belonging to the deer tribe. It is the Cervus Aristotelis, or black Rusa of Cuvier, and attains a considerable size, the antlers of a specimen now before me being three feet long. It is a large, bulky animal, rather heavy to appearance, but moves with considerable rapidity. The flesh is coarse and tasteless, but the head makes excellent soup. They are met with in considerable herds, and generally frequent the larger woods; when caught young, they are easily domesticated. The usual way of hunting them is, to beat the woods with dogs or beaters, and the sportsmen being posted at equal distances round the outskirts of the wood, they are shot, when they break, to make their escape from the dogs. They are very tenacious of life, and often carry off 8 or 10 balls, when not struck in a vital part. The skin is excessively tough and thick, and, when properly prepared, makes excellent mocassims, or mud boots.

The Bison is to be found near Kotergherry, and affords excellent sport.

A singular and rather rare animal is known under the name of Jungle sheep, which is, however, a misnomer, as they are

true deer, and of the sub-genus Stylocerus; they evidently belong to the tribe described in Cuvier under the name Muntjak, but I am at a loss whether to class them as Cervus Muntjak (Kijang) or Cervus moschatus (Nepaul Muntjak.) The principal peculiarity is, a sort of process, 2 or 3 inches long, growing out of the skull, covered with the skin; and into which the horns are inserted, the process being continued down to the nose. They are rather scarce, being found in pairs, and very shy, and difficult to approach. Their flesh is very dark-coloured, and very delicate eating, partaking of that of hare and deer, but superior to both. It approaches more nearly, in appearance and flavour, to that of the wild sheep of Persia, than any other game I have met with.

Another animal, not usually met with nearer than the Himalaya, is the Chamois, as it is called, but which is a species of Ibex: not having seen a specimen of the male, except at a distance, I am unable to pronounce upon its exact specific name, but it appears to approach more nearly to the Capra Caucasica, than the Capra Ibex of Cuvier. The specimen in my possession is a female, three feet three inches high, with annulated horns, 10 inches long, of a triangular form; the acute angle forwards, the base of the horns above the orbits nearly approximated, then bending upwards, outwards, backwards, and downwards, in a regular curve. The hair long, mixed with wool of a deep ash-grey colour throughout, darker on the back, which has a black streak down the centre, and lighter on the belly, with a whitish streak down the hind part of the shanks; the hooves strong, deeply divided, and supporting a strong upright pastern.

The male, at a distance, appears at least six inches taller, nearly black, with very large knotted horns, and a long black or brown beard. They are met with, in large herds, in the

most inaccessible parts of the Koondahs; are exceedingly swift and agile, bounding down the almost perpendicular faces of the rocks with the utmost ease, and are very shy and difficult of approach. The flesh is dark-colored, and though fine grained, very tasteless.

Hares are numerous all over the hills, principally among the bushes; and, in the cold weather, approach the gardens and enclosures in the Station. They are dark-coloured, and very large, quite as much so as an English hare, and are excellent eating.

Porcupines are exceedingly numerous, and very destructive to gardens; they differ considerably from those found in the low country, are much larger, and the flesh remarkably well-tasted.

The Otter has been seen in the Pycarra river.

Of domesticated animals, the only one which merits notice is the Buffaloe, which is kept in great numbers and of a fine breed, principally by the Todars. The common Cow is of a very small breed.

Sheep do not thrive well at first, probably from the wet, and change of pasture, but, after being acclimatized, become very fat and well-tasted.

Of the feathered tribe, the most remarkable are:

Woodcocks, which, though not very numerous, afford admirable sport to those acquainted with their haunts; they are not large, seldom exceeding 11 ounces, but are excellent eating. They come in at the end of October, or beginning of November, and disappear in March. Cocks cannot be flushed without Spaniels. Dogs, of every description, appear quite at home on the hills; the Newfoundland, in particular, acquires great size and beauty, and retains all his noble faculties in perfection. Greyhounds and Foxhounds are useful,

the former for coursing and the latter in following large Game. In short, all lovers of sport, should be well provided with dogs.

Snipes are large and well-flavored; they are not numerous, but a tolerable shot will kill five or six brace in a forenoon. They come in September, and are seldom found after April. That beautiful bird, the solitary snipe (Scolopax major), is occasionally shot on the hills.

Jungle fowl are very numerous, and very delicate, as are spur-fowl. Quails are common all over the hills.

An immense variety of Hawks, are every where to be met with, two of them are particularly beautiful, one milk-white, with a large black mark between the wings, and one of a cream colour. A large black Eagle is occasionally met with; an immense horned Owl, and many species of a smaller size may be numbered among the predatory birds.

The English Black-bird is very common, as is the Thrush, the wren, and the lark, and a great variety of woodpeckers. I have also observed a very beautiful kingfisher. The imperial pigeon, and blue wood-pigeon, and dove, are common, as are sand larks, and a species of green plover, or peewit.

Of Fish I have never seen any but a very small species, but I am informed that some of considerable size have been caught near Mallkoondah, in the deep pools of the river skirting the Koondahs. Crabs are common in all the brooks.

Reptiles are not in great variety—a very pretty small green snake, (perfectly harmless), is common in the dry weather, and some suspicious-looking species, said by the natives to be poisonous, have been seen about the Ghâts. Scorpions and centipedes are unknown. Frogs and toads are common, as also one or two small species of lizards.

Insects are fortunately rare, and not in great variety. Mos-

quitoes are occasionally seen, but never bite. A large brown beetle is very common at certain seasons—their larvæ are very destructive in the gardens. White ants are unknown, except at times showing themselves at Coonoor, and the black ant is only found about the Ghâts. The only animal of this tribe, which is at all troublesome, is the flea, which is very numerous in the early part of the monsoon. They are put to flight by an infusion of the root of a plant called by the natives Wassumboo, (Acorus calamus,) which is indigenous in the hills.

CHAPTER X.

POPULATION.

THERE are at present about 500 Europeans, settled at the three stations of Ootacamund, Coonoor, and Kotergherry, of whom about 400, reside at and near Ootacamund—and the East Indians amount to upwards of 200. The following is the last estimated census of the native population, prepared for the Editor by Colonel Cameron.

Estimate of the Native Population of the Neilgherry Hills.

Names of the Villages.	Males.	Females.	Total.
Todanaad or Ootacamund, ...	12,300	7,000	19,300
Makenaad, ...	2,967	2,493	5,460
Boothenuthum,.................	45	49	94
Sucubanuthum,.................	22	27	49
Seegoor,......................	10	10	20
Parungaaad, Coonoor, Kotergherry, .	5,500	4,500	10,000
Jackatalla, ...	1,000	500	1,500
Totals, ...	21,844	14,579	36,423

G. POTLETT CAMERON,
Joint Magistrate.

Ootacamund, 23rd August, 1856.

After the minute, accurate, and comprehensive account of the native inhabitants of the Neilgherries, already laid before

the world by Captain Harkness,* it would be presumptuous to offer any remarks on this subject; and to his valuable work, therefore, we beg to refer our readers, for full information with regard to the different tribes, particularly that most singular, and once interesting people, the Todars, who are undoubtedly the aborigines of the soil, and in every point of view, one of the most extraordinary races to be met with in India. But, of late years, their original simplicity of character has sadly deteriorated, and they are now only like the generality of the native inhabitants. He enumerates four other classes, the Boodigahs or cultivators, the Kothurs, who are the artisans of the hills, and the Erulars and Coorumbars, who inhabit the jungles on the slopes of the hills, and are little better than savages, in the very lowest stage of humanity.

* "Description of a singular aboriginal race, inhabiting the summits of the Neilgherry Hills," by Captain H. Harkness, Madras Army; noticed in the list of Publications given in the appendix, and from which an Extract is also introduced. See also a very interesting account of this tribe in the Madras Christian Herald of July 30, 1856, and following Numbers; also noticed in the list of publications.—ED.

CHAPTER XI.

EFFECTS OF THE CLIMATE ON THE EUROPEAN CONSTITUTION, SOUND AND IMPAIRED.

EFFECTS ON THE SOUND CONSTITUTION.

From the preceding account of the climate, it follows, almost as a matter of course, that it should be perfectly congenial to an European in sound health. Such is in fact the case. The principal inconvenience experienced by persons, on first ascending the Passes, is, a slight degree of tightness in the chest, and oppression of breathing, caused by the rarefaction of the air; but this is neither universal, nor of long continuance.

Some people are also at first affected with sleeplessness, occasioned by the nervous system being too highly stimulated, principally by the repulsion of blood from the surface, and possibly also by its being in a higher state of oxygenation (?).

The difference of temperature, is seldom complained of by any but such as, from a long residence in a warm climate, have become so Indianized in their feelings, constitution, and habits, as to be unable to bear the slightest approach to an European climate.

Individuals, so unhappily circumstanced, have little comfort to look for at home, and can scarcely hope to benefit by the hills, the charm of which is their close resemblance to

England. A very short residence, generally, perfectly reconciles people in health to the change, and one of the most remarkable effects of it is, the capability of bearing fatigue. Men who, in the low country, though having nothing to complain of, were in such a state of relaxation, as to feel their morning "constitutional" a task and a bore, think little of being eight or ten hours in the open air on the hills, and that for several days in succession, the only effect of the exercise being, an increase of appetite and spirits, and capability of exertion.

If any proof indeed were wanted of the perfect adaptation of the climate to our constitution, it would be sufficient to look at the European children, whose rosy chubby cheeks, sparkling eyes, and buoyant spirits, form a pleasing contrast with the pale, languid, irritable-looking little wretches one is so often doomed to see, dying by inches in the low country.

Females are sometimes less favorably impressed with the climate than those of the other sex. The indolent habits of life acquired by them in the low country, the almost universal derangement of their system, *consequent upon exposure* to a constant high temperature; and the susceptibility of atmospherical impressions, natural to their highly mobile temperament, sufficiently account for this circumstance; though, I fear, it must, now and then, be attributed to the moral effect of a quiet secluded life, as contrasted with the brilliant, though heartless society they are accustomed to, at most of the large stations in India. Allowing, however, a longer period of acclimatization, they become quite reconciled to it in the end; and the effect on their health, appearance, and spirits, is quite as decided as in the stronger-marked, but less impressible characteristics of the other sex. It not unfrequently happens, that residents in the low coun-

try, who visit the hills for a short time on business or pleasure, are disappointed in their pleasurable anticipations, and form an extremely unjust and unfavourable opinion of them. Many circumstances contribute to this hasty judgment; making no adequate preparations for the great and sudden change of climate, they find themselves very uncomfortably situated as regards clothing, houses, servants, and the thousand *etceteras* essential to comfort in a cold climate; and, without giving themselves time to form a more accurate opinion, they leave us unfavorably impressed with every thing they have seen. Upon the whole, we can scarcely be surprised at this, when we every day see our brethren returning from Europe with complaints of the discomfort and annoyance they have undergone, from the complete change of habits, feelings, &c. forced upon them while at home; and I would protest against all such ill-grounded and hastily-formed opinions, as much in the one case as in the other.

Let visitors prepare themselves, by proper clothing, for the change to a cold climate, take care to get themselves settled in a comfortable house, and see to the comfort of their servants, &c. and I will answer for their quitting the hills with only one wish, that of revisiting them as soon, and for as long a period, as possible.

The Editor can fully confirm the above remarks as to the ruddy and joyous appearance of the children: and, as respects the fair sex, he can, with equal truthfulness, affirm, that their complexions were as bright and clear, their spirits as gay and buoyant, and their eyes as sparkling and beaming with animation as if they were enjoying the fresh mountain breezes of the Highlands of Scotland; while their dashing and fearless riding over the hills, was at a pace that would astonish the most accomplished of their sex in Hyde Park.

EFFECTS ON CONVALESCENTS AND ON DISEASE.*

A DIFFICULTY naturally presents itself in discussing the effects of the climate on the European constitution, when impaired by disease or long residence in India, to avoid technicalities, and render a subject, so purely professional, interesting, and instructive, to the general reader. With a view to avoid as much as possible this difficulty, I shall content myself, after premising a very few general observations and hints to invalids on their first arrival, with very briefly stating the results of my experience in the more important Indian diseases, and, as immediately deduced from this, with making a classification of those which are likely to benefit by immediate change to the hills, as distinguished from others which require the premisal of a sea-voyage.

SECTION 1.—GENERAL OBSERVATIONS.

On change of climate.

The effects of change of air in disease are too well known, and too generally admitted, to require discussion here. We are as yet totally ignorant of the manner in which the favourable change is operated, and in the present state of our chemical knowledge, unable, as we are, to detect the difference between the heated impure steam of a crowded hospital, and

* These remarks, with a few additions and corrections, are extracted from a paper read before the Medical and Physical Society of Calcutta in 1831. Further experience has fully confirmed the views therein expressed, and has enabled me to speak with more confidence on certain points.

the health-inspiring breeze of the mountain top, we are likely to remain in ignorance. Whether the cause be, an actual difference in the chemical constitution of the air, or merely that there has been a change made, from the self-defiled atmosphere, surrounding the sick couch, to one as yet free from the exhalations of disease, are points which we are yet unable to pronounce upon, though we see it every day proved by the fact of a change, even though from a lower to a higher situation, from a purer to a less pure atmosphere, operating the most miraculous cures in cases, to all human appearance, hopeless. Much must be doubtless attributed to the moral effects, of a removal from the contemplation of objects associated, in the mind of the patient, with images of suffering and death;* but still, so decided is the benefit derived, that we are compelled to acknowledge, though unable to account philosophically for the cause, that change of air is one of the most powerful curative means we possess. And when this change involves a variation of temperature, and moisture, (two conditions of the air, for the agency of which we can fully account) to any considerable or remarkable degree, we are justified in anticipating the most marked advantage from it. The effects of a change, to an atmosphere of nearly the same condition, are, at best, transitory, and after the system becomes habituated to it, a relapse is generally the consequence. When, however, the transition is so great, as to produce a general re-action of the system, we may hope, not only to find the diseased action checked, but permanently altered: and this is, for many reasons, still more decidedly the case, when the condition of the new atmosphere approaches to that habitual

* As, for instance, in a change of rooms, which, in sickness, is often felt as a great relief from gloomy associations, and the *ennui* always attendant on long confinement.

to the patient: in other words, to that of his natal air. That the change from the low country to the mountain air of the Neilgherries, is nearly equivalent to that of a return to Great Britain, will scarcely be questioned, on perusing the preceding account of the meteorology of the hills; and we are therefore bound to anticipate as good effects from the one, as from the other, provided we make allowances for the countervailing effects of the *suddenness* of the *transition*.

In returning to Europe, besides the inappreciable moral influence of a return to friends, home, and country, the patient has the benefit of a prolonged sea-voyage, a curative agent in many instances of first-rate importance, and he has the further advantage, of a gradual and twice-repeated change of climate. While, in ascending the hills, he has to undergo the transition, from the temperature of Madras to that of the south of England, in the course of a single day, sometimes of a few hours, much as if he were to ascend from the Coromandel Coast in a balloon, in the afternoon of a red hot day in May, and land, in the course of five or six hours, on the coast of Devonshire.

This sudden transition, where the constitution is prepared for it, has its advantages in a great majority of cases:

1st. By exciting a healthy re-action in the system.

2nd. By exciting a new action, which overcomes the diseased one.

3rd. By restoring the healthy powers of the constitution, and the general tone of the viscera, particularly the digestive organs.

4th. By removing the eternally recurring causes of irritation, in the low country, such as heat, moisture, closeness, &c.

5th. By breaking the habit of disease; a consideration of vast importance in some of the most obstinate forms of

Indian disease. Fever is the best illustration of this fact; the tendency to a recurrence of febrile paroxysms, is increased, by repetition, to a degree totally unconnected with the debility, or extent of organic lesion produced, and only to be accounted for, by the all-powerful influence of habit on the constitution. In one of the most obstinate forms of this disease, Intermittent Fever, it is frequently sufficient to put off, or change the period of access, to produce a speedy cure, and in most cases, the transition from one type to another, from a Tertian to a Quotidian, for instance; in other words, "the change of habit," is considered a salutary indication.

On the other hand, when the constitution has not sufficient power to produce this salutary re-action, or what is worse, when the sudden change of distribution of the circulating mass, throws an unusual load on internal organs, unfitted by disease for sustaining the shock, the effect must be proportionally mischievous, and cases of this description, come under the category of diseases which are not curable by a sudden change of climate; or, at least, not until the diseased action is checked, and the powers of the constitution restored by a sea-voyage, or residence on the sea-coast.

These positions will perhaps be better understood, when treating of the effects of the climate on Indian diseases, in detail. I have dwelt the more on them, because I conceive, that a want of attention to them, or, more correctly perhaps, the general ignorance of the necessity of attending to them, has been the cause of much unnecessary disappointment, and depreciation of the curative and restorative powers of the climate. Many cases have been sent to us for treatment, in the last stage of organic disease; others, in which functional derangement had proceeded to such a pitch, that the slightest shock was sufficient to overturn the balance of the constitu-

tional powers; and not a few, in which low country habits, and length of residence in a hot climate, had paralyzed or altered the original European form of the constitution, and rendered a transfer to this climate, nearly as uncomfortable to the feelings and detrimental to the feeble remains of vitality, as that of a trembling ship lascar, from the hot moist climate of the sea-coast of India, to the chops of the English Channel.

In such cases, it is needless to say, that all hopes of a cure, in other words, of a miracle, were futile, and could only end in disappointment; and though, increasing acquaintance with the nature and power of the climate, is fast leading to a better and more rational selection of cases, it appears somewhat extraordinary, that the simple and obvious expedient of consulting some qualified person on the spot (at least in doubtful cases) should not sooner have been had recourse to. With a view to supply this desideratum, I have subjoined a classification of diseases,* proper to be transferred to the hill climate, and which, though far from complete, will, I trust, be found correct as far as it goes, and, as such, to possess some share of utility.

We shall now notice another important general consideration; the length of time required for the climate to operate beneficially. Here it must be recollected, that the object in all such cases is, not only to check or cure the existing disease, but to remove, as far as possible, the tendency to relapse, unfortunately one of the invariable concomitants of all Indian diseases. This can be effected by time alone. Long after all symptoms of actual disease have disappeared, the tendency to relapse, on the re-application of the exciting causes, will remain; and time alone, by restoring the tone of the constitution generally, and the weakened organs in particular, can remove this proneness to a return of the original disease.

* See Sec. IV.

It is not easy to fix a period for this consummation of the cure, even in the most general terms, so much must depend on the nature of the individual case, and of the disease, the time it has lasted, the age, sex, and constitution of the patient; as a general rule, however, it may be laid down, that a patient who resorts to the hills, convalescent from any of the more serious forms of Indian disease, should not quit the hills, until he has been, at least, six or seven months free from all symptoms of actual disease.

An important consideration, as connected with the hills, but which has not yet met with the attention it deserves, is, the prophylactic (preventive) powers of the climate. No axiom in medicine is more firmly established, than that of "Venienti occurrite morbo," and I shall be disappointed, if this is not hereafter discovered to be applicable, in the most extended degree, to the Neilgherries.

It must have occurred to even the most casual observer, to have seen numerous instances of young men on their first arrival in the country, attacked by some of the common Indian complaints, which yield readily to the usual means, but are sure to re-appear at the end of a very short time; until, after a succession of similar relapses, the unlucky subject is either forced to quit the country, to recover his health, or perhaps finds a release from reiterated sufferings, in a premature grave. It is by these slight, but repeated attacks, in particular, that is laid the foundation of a whole catalogue of visceral diseases, parabysmic enlargements, organic derangement, scirrhus, &c. and, even under the most favourable circumstances, such a case can rarely, if ever, be converted into an efficient soldier. Were he, however, after his first or second attack, transferred to a cool healthy climate, and left there, till the natural powers of his constitution had overcome this predisposition to disease,

are we not justified in the expectation, that his amended health, and, in the case of a private soldier, improved habits, might enable him to resist exposure to the same exciting causes? I have seen numerous examples of young officers, whose early period of service was a series of constant illness and suffering, but who, having been sent to Europe, before the formation of distinct organic disease, have returned to India with constitutions completely renovated, and have afterwards proved to be among the most zealous, active, and efficient soldiers, of whom our ranks can boast. Of this fact, (without, however, pretending to the credit of the *last* part of the exemplification) I may cite my own case, as one of the most striking examples.

I am, I confess, sanguine as to the result of a similar experiment, made in incipient disease, by sending young men to the Neilgherries for a time, with the view of checking the predisposition to disease, so often manifested shortly after their first arrival in the country; and I consider the plan particularly applicable to the cases of young European soldiers, for whom the alternative of being sent to Europe for their health is nearly, if not wholly, out of the question.

Section 2.—Hints to Invalids.

The first most obvious effect of the climate of the hills on an invalid is, to repel the blood from the surface. It appears from the preceding remarks on climate that the average temperature of Ootacamund is 58°, while that of the low country on the Coimbatoor side is probably 86°, or 88°, and on the Mysore side, 82°, or 84°; consequently, the difference of temperature is, on the average, from 24° to 30°. But if we sup-

pose an invalid to arrive in the dry season at Goodaloor, or Meetapollium, in the morning, he will find the thermometer at all events 88°, probably 90°, and *the same evening, on reaching Ootacamund*, it will descend to 45°, perhaps to 42°, making a vicissitude of from 43° to 46°. The immediate consequence of such a decided change of temperature, aided by the superior dryness of the air in the higher situation, will be, to constrict the vessels of the skin, to check perspiration, and transpiration, and throw the blood on the internal organs; and, should any of these be weakened by previous disease, the consequence will be, a greater or less degree of accumulation of blood in the weak viscus, or congestion, as it is technically called. From the close sympathy between the skin and liver, the latter is the organ most frequently affected in this way; but the bowels, head, and lungs frequently partake of this unequal distribution of the circulation, the effect being added to in the lungs, by the difficulty of respiration produced by the rarefaction of the air.

When no actual organic disease exists, and when the constitutional powers are not permanently debilitated, nature soon restores the balance: a re-action takes place; the liver secretes more bile, the superfluous fluid is carried off from the bowels by a mild diarrhœa, and from the lungs by copious expectoration, more particularly if this salutary process is assisted by care on the part of the invalid himself, warm clothing, &c. and by the exhibition of mild aperient remedies, such as the Plummer's pill,* which has the invaluable property of exciting the action of the liver and bowels, and determining to the skin at the same time.

It is only in cases of actual organic disease, or, when the debility of the constitution is so great as to prevent re-action,

* Composed of calomel in small quantity, antimony, and guaiac.

that any serious or permanent mischief is to be dreaded from the congestion of the viscera. Cases of the former description should not approach the hills at all: and the latter should, if possible, premise a sea-voyage or residence on the sea-coast, until convalescence is somewhat advanced: and in these, as well as the more aggravated cases of what is called, by medical men, functional derangement of the viscera, the time selected for ascending the hills, if a choice exists, should be in April or May, when the comparative warmth and moisture of the air naturally lessens the risk of a check to the action of the skin, and consequently of internal congestion. In all such cases also, it is prudent to try the effect of a short previous residence at Kotergherry or Coonoor, the milder climate of which renders the change less abrupt, and will generally be found, for many reasons, to agree better with delicate invalids. Under the most favourable circumstances, those who are unable to take much exercise in the open air will derive more benefit from the climate of Kotergherry or Coonoor, where the temperature, throughout the year, is so mild, as scarcely to necessitate the use of a fire.

The next point, requiring the attention of invalids at first, is, the circumstance of their digestive powers seldom keeping pace with the increase of appetite, produced by the change. This is especially the case with vegetables, a tempting array of which is placed before the stranger, and, but too often, induce him to forget the laws of diet, laws as immutable as those of the "Medes and Persians," and any infraction of which is sure to be followed by retributive punishment, in the shape of a violent attack of dyspepsia, succeeded by colic diarrhœa, and not unfrequently dysentery. Luckily the cause is here within reach, and a little prudence at first is sufficient to obviate all mischief.

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Invalids generally suffer, in a greater degree, from the sleeplessness before mentioned, and are relieved by the same means as those recommended to obviate congestion; should these prove insufficient, a little Hyoscyamus may, with advantage, be added to the Plummer's pill.

Headache, is by no means an unfrequent complaint on the part of strangers; when it depends on undue determination of blood to the organ, much caution is required. Kotergherry, or Coonoor, is in such cases to be preferred to Ootacamund, and no time lost in consulting a medical man. In ordinary cases, a little aperient medicine, moderate diet, and avoidance of any cause which accelerates the circulation, such as violent exercise, ascending hills, and exposure to the sun, seldom fail to remove all unpleasant feelings in a few days.

Persons who have suffered from fever, should be cautious to avoid passing through the jungle at the foot of the hills during the night; and, if unluckily detained in them after sun-set, they should on their arrival submit to a course of purgatives, followed by Quinine in small doses.

In every instance, of whatever description, warm clothing is of vital importance. Medical men are now generally agreed, that even in the low country a light flannel banian is of service in maintaining the action of the skin, preventing *chills*, &c. and *à fortiori*, it is indispensable on the hills;*

* The best *protection* is, a quick plunge into a cold bath, or sponging the body rapidly with cold water, *immediately* on getting out of bed, rubbing well dry, dressing quickly, taking a glass of cold water and a long walk before breakfast. The Editor regrets that his friend Dr. Baikie is not here, to revise much that he has written on the course to be pursued by invalids, because, since his return to England, he has become a convert to Hydropathic treatment, and now practises it, most successfully, in conjunction with Homœopathy. All intending visitors

every invalid should be provided with a good stock of flannel banians, cummerbunds, drawers, and woollen stockings, in which he should proceed to array himself from head to

to the Hills are recommended to read the works of Drs. Gully and Johnson on Hydropathy, as the climate of the Hills is admitted to be equal to that of "Malvern" for the exhibition of the cold-water system.

The Editor, having experienced in his own person, and witnessed in others, the wonderful power of the agency of cold water, in the efficient cure of dyspepsia, and of long continued suffering from headache, and in strengthening and invigorating frames debilitated by long residence in the plains, is induced to make an *earnest* appeal to those who have so suffered, to lay aside all prejudice, and to read the books adverted to—and judge for themselves, whether the rationale is not convincing, and elucidated, by the *innumerable* cases cited of the *surprising* effects of the system pursued by the authors; and he calls attention to the following emphatic language of the writer of the first-mentioned treatise, a man of acknowledged ability, and a regularly matriculated Physician of extensive practice.

Dr. Gully, in his preface, thus expresses himself:

"My hope is, that this book may open the eyes of all who read it, to the destructive tendency of the drugging and unnatural stimulation, on which such numbers of the English public maintain a *feverish* vitality for a few years, to sink at last into the condition of hopeless valetudinarians.

"The past history, and present state of many such, who are under my observation, are perfectly *terrific*. It is no affectation to say, that my mind has been oppressed, weighed down, by accounts which invalids have given of the process by which they became the shattered beings they were; a process almost invariably including years of monstrous drugging, and its unvarying accompaniment, intense suffering of mind and body.

"Most sincerely do I hope, that these pages may be the means of effectual warning from that destroying plan of treatment, even though they should fail to establish the more rational system which they profess to teach.

"But almost every case, of every practitioner of the WATER CURE, is establishing it daily on a broader and deeper basis; and *the once most sceptical*, are now obliged to acknowledge that, at least, it is a vast addition to the remedial art."

foot before ascending the Passes. Too much cannot be said in praise of the flannel cummerbund. I have seen obstinate bowel-complaints cured by its adoption alone, and it is no less essential to females.

Cold feet is a very general complaint among new comers, particularly ladies; the remedy is simple: the adoption of lamb's wool stockings, which ought to form part of the stock of every visitor, whether in good or indifferent health.

A stock of stout shoes and boots, should not be forgotten. In the wettest weather, a person watching his opportunity, and armed with thick-soled shoes, may always contrive to get a dry walk in the intervals between the showers, not forgetting, however, the precaution of changing both shoes and stockings on his return home.*

For some time after arriving on the hills, invalids should avoid exposure to the night air, and should indeed never be out after sun-set. The reduction of temperature, which fol-

At page 118 of the fifth edition of his valuable work, Dr. Gully expresses himself in the following energetic terms, as to the power of Hydropathy in the cure of dyspepsia.

"However strong, however general the prejudice, and however true it may be, that in diseases of organs, distant from the stomach, medication may be curative; I cannot but repeat the strong conviction I have, that *medication never did, never will, never can, cure a case of chronic dyspepsia, and that, short of organic change, the hygienic water treatment seldom, if ever, fails to cure it.*—Ed.

* It is not a little remarkable that most people who adopt this, or similar precautions, are but little affected by the wet on the hills, though unable to bear it in the low country. When lately in Europe, for the recovery of my health, I never had my feet wet for however short a time, without an attack of diarrhœa. On the hills, it often happens that I am unavoidably wet through, twice or thrice a day, during the monsoons; but, taking the precaution of shifting my clothes as speedily as practicable, I have never suffered the slightest inconvenience.

lows the disappearance of the sun, must be felt, to be understood, and no one who values his health should expose himself to the risk of cold, in quitting a crowded room or an evening party, to return home after night-fall. In the low country, one is compelled to be up with the sun, to get a mouthful of fresh air; but on the hills, in an European climate, this is neither necessary nor prudent, and the invalid should wait till the sun has attained sufficient height to drive away the cold and moisture of the night, before he ventures out, taking care, however, to return in time to avoid the powerful effects of the sun's direct rays, which are greatest about 9 or ½ past 9 A. M.

The diet of invalids, on the first ascent, must of course in a great degree be regulated by circumstances, depending on the precise nature of each individual case. In general, however, they ought to adhere to light animal food, with bread or biscuit, eschewing vegetables, pastry, cheese, &c.: for drink, port or sherry is preferable to the lighter wines; beer is unnecessary, and only loads the stomach. As a general principle, invalids ought to diminish the quantity of stimulus* in the shape of wine, spirits, or beer, until completely acclimatized. It is an undoubted fact, that a comparatively small quantity of any of these articles produces head-aches and other febrile feelings, probably from increasing the existing tendency to accelerated circulation of the blood.

In regulating their hours, regard must of course be had to their previous habits of life; most residents have gradually adopted English hours, as most convenient, and allowing more time for business; but invalids will do well, for some

* Cold water is the best stimulant, and Dr. Gully proves it to be so.—ED.

time at least, to breakfast early, dine at 3 or ½ past 3, and finish the day with tea, or something equally light.

Exercise, is another essential part of regimen. Invalids should, at first, be cautious to avoid exposure to the sun, and exercise should be taken so as not to produce fatigue, but only to excite a gentle action on the skin. Riding, as being less exciting, and less fatiguing than walking, is to be preferred at first, and a pony to a horse, on the same principle. Walking has another disadvantage, that it accelerates the circulation, and increases the feeling of tightness and constriction in the chest; it also increases the liability to chills, as after toiling up a steep ascent, and getting well heated, one is frequently met by a current of cold air, producing immediate constriction of the vessels of the skin. When the invalid has become acclimatized, he should gradually increase his quantum of exercise; and when fairly recovered, should pass as much of the day in the open air, as his strength will admit.

The effects of the different seasons on diseases are by no means unimportant: very few invalids can bear with impunity the great difference of temperature between day and night, and the excessively dry atmosphere of the cold season, especially during the prevalence of the strong N. E. winds. Exposure to the sun also, at this season, is generally attended with bad effects. Upon the whole, the monsoon season (notwithstanding its comparative dampness) is, from its greater equability of temperature, the absence of cold winds, and the cloudy sky, admitting of exercise being taken at every dry interval, infinitely the best season for commencing the treatment of a chronic complaint, and, where circumstances admit of a choice, I should prefer April as the period for ascending the hills. As the succession of the seasons differs considera-

bly at Kotergherry and Ootacamund, it is possible by well-timed changes from one to the other, to avoid much of the unpleasant weather at both. I am in the constant habit of transferring the more delicate classes of invalids to Kotergherry or Coonoor, whenever I perceive that they are retrograding, or stationary, at Ootacamund; and the benefit derived has been of the most marked description, particularly at the commencement of the monsoon, when the highly electrical state of the atmosphere occasions much suffering to a majority of our patients.

Section 3.—Effects of the Climate on Indian Diseases, in detail.

The following observations are the result of my experience in more than 300 cases, of the most varied description. Of these, 129 were European soldiers, treated in the convalescent depôt, and 132 were officers, civil and military.

The time, at which the sanative effects of the climate begin to appear, varies considerably in different diseases, and in different individuals labouring under the same disease. In some, the restoration is immediate, and permanent; in others, it is followed by slight relapses, and in a great many cases, there is little or no amendment for many months. This is particularly the case with females, upon whom the climate is much longer in producing an effect, than on the other sex, and they derive decidedly more benefit at first from the milder climates of Kotergherry, and Coonoor, than of Ootacamund. If the accommodation were sufficient, I should be disposed to send all ladies, and a considerable pro-

portion of the severer cases among officers, to Kotergherry, for the first three months.

Sudden changes of weather have, as might be expected, a considerable effect on all the more delicate classes of invalids. Bowel-complaints, and dysentery, are peculiarly affected by a transition from dry to wet weather, but the effect is fortunately in general only transitory, and the monsoon is, upon the whole, the most favorable season for invalids, probably from its great equability of temperature.

The electrical condition of the atmosphere, exercises a very marked influence on most invalids on the hills.

Rheumatism, cephalalgia (head-ache), and nervous complaints, are most sensible to its action, and patients, affected with these, or similar complaints, can generally foretell the approach of a thunder-storm, producing a general feeling of uneasiness, and a temporary aggravation of the pains.

The influence of the phases of the moon on the paroxysms of periodical disease, has been much disputed, and is still "*sub lite*." I must confess myself convinced of the truth of the popular opinion, though not to the fullest extent perhaps. Scarcely a case of intermittent fever, contracted in the low country, has come under my observation here, which did not undergo a decided aggravation at the full and change; if the paroxysms were regular at other periods, they were severer, and of longer continuance at this; the cold fit being always strongly marked, though often scarcely perceptible in fits occurring in the intervals. The quartan type, is that most subject to this mysterious influence, as are the obstinate types known as Seringapatam and Guzerat fevers. I have two instances in my eye, at this moment, one, a field officer of the army, who for the last 16 or 18 years has had a regular return of fever every full moon, preceded by violent

head-ache; this was originally contracted in Orissa; the other, a civilian of rank, who contracted the disease at Seringapatam, 12 years ago, and who experiences a relapse at full and change. Cephalalgia, and hysteria, appear also to be subject to this lunar influence, though less distinctly, and in a minor degree.

The diseases of children, are fewer in number, and infinitely less violent in degree than in the low country. Dysentery, is of rare occurrence, as are also fever, marasmus and convulsions. An idea prevails, that teething takes place less favorably on the hills than below, but this is decidedly contrary to my experience, and I consider the mischief, in one or two alleged instances, to have originated in the child's having been weaned *too early*. A similar idea prevails with regard to vaccination, which is said to be more difficult to establish here than elsewhere; this again is entirely owing to the difficulty of procuring good matter.*

Small-pox, was said to be formerly common among the aborigines; it has now nearly disappeared. We have vaccinated more than 1,100 of their children within the last two years, and I have never heard of its occurrence among the settlers, whether European or Native.

Measles are rare, I have never seen an instance of it, nor scarlatina. Hooping cough is more common, but generally mild, and is readily cured by a change to Kotergherry and Coonoor, or *vice versâ*. Of croup, I have only seen one case.

* Either from some defect in the packing, or some more abstruse cause, dependant on sudden change of temperature, vaccine matter contained in glasses or phials generally spoils in being conveyed to the hills.

Fortunately, the facility *now* of procuring a child with vaccine pustules both in Ootacamund and from Jackatalla obviates this objection.

In short, European children are peculiarly healthy, and thrive most remarkably on the hills.

The effects of the climate on natives of the low country, are somewhat modified; it being to them nearly as much a foreign climate as India is to us. They are very subject to slight ephemeral fever, and bowel-complaint, on their first ascent, particularly if care be not taken to prevent their exposing themselves to wet, and sleeping on the ground. They very readily become acclimatized, however, and it appears to me that they become more muscular, and more capable of enduring fatigue, than even in their own country.

The general plan of treatment pursued, may be described in a very few words. In the first instance, I have generally endeavoured to obviate the effects of the sudden transition, and consequent congestion of the viscera, by mild aperients, diaphoretics, warm bath, &c.

The after treatment depends of course on the peculiar nature of the original disease. If an hepatic affection, a course of alterative mercurial medicines (Plummer's pill is my favorite prescription), nitric acid, a mercurial plaster on the side, and finally tonics of the simple description.

In dysentery, ipecacuanha, in the form recommended by Mr. Twining, is our sheet-anchor—and has proved equally efficacious in simple diarrhœa; sulphate of zinc, sulphate of copper, and the usual tonics, have also been adopted with advantage: the former of these medicines, (assisted by tartar emetic in nauseating doses during the paroxysms,) I have found highly useful in cephalalgia. Fever, is generally subdued, by smart purgatives and diaphoretics during the fit, with quinine in considerable doses during the intervals, particularly just before the access of the fit. I have, now and then, been obliged to have recourse to arsenic, in the more

obstinate forms of fever, and almost always with success. The enlargement of the spleen, consequent on intermittent fever, has generally yielded to the spleen mixture recommended by Mr. Twining.* Rheumatism, I have generally found manageable by a steady course of Sarsaparilla, infused in lime water.† Dyspepsia, requires more management, and generally demands a variation of successive antacid and tonic remedies; one of the most useful of these I have found to be, a light bitter infusion, such as infusion of Calumba or Cascarilla, with from three to seven grains of carbonate of potash in each dose.

In female complaints, tartrite of potash and iron has proved a very useful assistant to the tonics in general use.

As a general principle, my object has always been to obviate symptoms as they arose, and to assist nature, by the simplest means, in her endeavours to restore the tone of the constitutional powers, leaving the rest to the climate, in the effects of which I have *never* been disappointed.

A few words, on each of the more important Indian diseases, will appropriately conclude this part of the subject.

Cholera, has only once occurred as an Epidemic on the Hills; this was among the men composing the corps of pioneers at Coonoor, who had been previously much weakened by fatigue and exposure, and lost fourteen cases: only one case occurred at Ootacamund, and one at Kotergherry; and on a former occasion, when the Governor's camp was attacked at the foot of the hills, the disease was instantly checked on their ascending; no new cases occurring, and those, previously attacked, rapidly recovering.

* Transactions of the Calcutta Medical and Physical Society, vol. iii. page 365.

† Sir B. Brodie's preparation.

Fever is unknown on the hills, except when contracted previously in the low country. In cases which have suffered from it below, it is, of all other diseases probably, that which derives the most immediate and decided benefit from the climate, at least if unconnected with permanent derangement of the liver. When complicated with affection of the spleen, as in the Seringapatam and Guzerat fevers, it proves more obstinate, but rarely intractable. Jungle fever, one of the most dreaded and intractable of the whole class, is in general so much modified by the climate, as to lose its formidable character, as a proof of which may be stated the fact, that out of some 18 cases, which have come under my observation, we have lost only one patient.* Fortunately, the circumstance of this form of fever seldom or never declaring itself before a fixed and definite period, generally the eleventh or twelfth day after exposure to the miasm, we are enabled to apply precautionary measures so as frequently to arrest the attack altogether, or at least weaken its force considerably. Among other striking examples of this fact, the following is not the least remarkable:—In 1831, a party of 27 European convalescents, under charge of Lieutenant Croft and Dr. Au-

* This was in every respect a most unfortunate instance, as being that of a gentleman of distinguished talents, of the most amiable manners, and the most unwearied zeal. Circumstances having induced him to devote much of his time and talents to subjects connected with the improvement of the Neilgherries, his loss fell with peculiar weight on us.

I allude to the late Dr. A. T. Christie, who contracted the disease while passing through the Goodaloor jungle, on his way to Ootacamund: being naturally much predisposed to febrile derangement, the morbid action took such hold upon him, acting as a poison on the nervous system, that medicine proved completely inert, and he sank without a struggle on the sixth day after the first accession.

chinleck, while on their march to join the depôt here, owing to some misapprehension of the Quarter Master General's instructions, passed a night in the middle of the jungle at the foot of the Ghât. The moment I ascertained this fact, I placed all the Europeans under a rigid system of surveillance, and they were each well *disciplined*, and took considerable quantities of Quinine, with other ordinary precautionary measures. Lieutenant Croft, being subject habitually to fever, was subjected to a similar course of treatment, and all these escaped without a single untoward symptom; but Dr. Auchinleck, relying on the strength of his constitution, neglected the precautions recommended to him, and the consequence was, that on the eleventh day he was attacked by the fever, in its most marked and aggravated form, and only escaped by the adoption of the most active and decided treatment.

Dyspepsia, or Indigestion, when unconnected with serious derangement of the liver, is another of the diseases which benefit, in the most marked and decided degree, by the climate. When we recollect that this Protean malady often baffles the highest order of talent and professional experience in Europe, it is no small proof of the efficacy of our climate to say, that dyspepsia is rendered even manageable by its influence.*

Debility, in whatever degree, and particularly when occurring as the result of long residence in the low country, without being connected with decided disease, seldom or never fails to yield to the influence of our bracing air, aided by proper diet, exercise, and regimen. The only exception to this is the case of those who, by such residence, have become Indianized in their habits and feelings; to them, the cold and

* If not, then the cold water system will succeed, and no medicine will prevail.—Ed.

wet are serious and insuperable obstacles, and they suffer so much discomfort in this way, as nearly to neutralize any benefit their health may derive.

Habitual constipation, in the low country a very obstinate complaint, yields at once on the hills. The additional quantity of fluid thrown into the bowels assists this effect at first, and the restored tone of the stomach, bowels, and digestive powers in general completes the cure.

Local, and cutaneous diseases, of every description, sores, ulcers, affections of the joints, fractures, injuries of the head, and all other affections of this class, yield to appropriate remedies with, at least, as great facility, as under the most favorable circumstances in Europe; convalescence being in all of them incredibly rapid and perfect.

Pulmonary disease, being of comparatively rare occurrence in India generally, is not often the subject of treatment here; where it has occurred in its earlier stages (the only circumstances under which it is manageable in any part of the world), it has presented no difficulty whatever.

The host of diseases peculiar to females, acknowledge the influence of our climate in a remarkable degree; they are often extremely obstinate, and are very generally rendered more so by the impatience of restraint, and unpardonable imprudence of the sufferers themselves, but nevertheless, almost always, yield to time, and the gradual effects of the climate.

Diarrhœa, though requiring much care on the part of the medical attendant, and much self-denial on the part of the patient, from the liability to relapses consequent upon atmospherical changes, and slight errors in diet, has not in a single instance resisted the effects of judicious treatment; it is, however, a most obstinate disease, and in common with the next to be noticed requires a long freedom from attacks; in

other words, a prolonged residence on the hills, to secure the sufferer from relapses, on returning to the low country.

Dysentery, whether acute or chronic, is so seldom met with, unconnected with derangement of the liver, as to fall more properly under the next head. Under whatever form it occurs, it is justly considered as one of the most formidable and fatal of Indian diseases, occasioning a greater loss of life among the lower ranks of Europeans in particular, than any other complaint—Cholera not excepted. Upon the whole, our practice in the less aggravated forms of the disease has been tolerably satisfactory, but it always proves extremely obstinate, from the tendency to relapse from comparatively trifling causes, such as slight atmospherical changes, errors in diet, exposure, &c. and it is rarely overcome without more or less injury to the constitution. It is in this, and the next class of disease (hepatic), that I conceive the precautionary measure of a sea-voyage most urgently called for: with this advantage I apprehend that the results would be completely reversed; but without it, I am disposed to think that none but the mildest forms of the disease should be transferred to the Neilgherries, and that, in all of them, the patient should be acclimatized by a previous residence at Kotergherry or Coonoor, until the disease is fairly subdued, and nothing remains to be done, but to invigorate the constitution, and restore the powers of digestion and assimilation, by a transference to the bracing climate of Ootacamund.

The same observations apply, but with still greater force, to the numerous and important class of hepatic diseases. The liability to congestion, from the sudden change of temperature, the mischief arising from the susceptibility of the skin, between which and the liver there exists the most intimate sym-

pathy, to atmospherical vicissitudes, and the inability to bear exposure to the sun, all operate unfavorably at first, even on the mildest cases of liver-complaint. In many of these, by the adoption of due precautions, and by sending the invalid to spend the first few months in the milder climates of Kotergherry or Coonoor, we have been enabled to neutralize these obstacles, and ultimately to restore them to health. But as a general principle, it must be conceded, that the climate of the hills is not suited to hepatic disease, *when of long standing, if of considerable severity, or if complicated with affections of the bowels,* unless the disease has been completely subdued by a previous sea-voyage. When the affection amounts to organic disease, leaving little hope of amendment from *any* climate, it is more likely to have the fatal termination accelerated than retarded by a residence here; and, when a scrofulous taint exists in the constitution, it is difficult to prevent its running into abscess.

Rheumatism, as a consequence of the abuse of mercury in the low country, is not uncommon. Though an obstinate affection, it always yields to general tonic remedies, such as the infusion of Sarsaparilla above-mentioned, aided by the bracing effects of the climate.

Gout is equally manageable. The *cure* of this singular disease is perhaps in every instance impossible; when the constitution has the arthritic tendency, all that can be expected is, to reduce the number of fits, moderate their violence, and prevent their injuring the general health, all of which, with but little assistance from medicine, is perfectly effected by the climate.

——————> Section 4.—Classification of Diseases.

I propose to divide this subject into three heads:

1st Class.

Diseases in which I conceive the patient may, with safety and advantage, be transferred at once to the hill climate, including those which would be benefited by a previous re_ sidence at Kotergherry, and Coonoor.

1. Incipient disease, of every description.
2. Fever, if unaccompanied with severe affection of the viscera.
3. Diarrhœa.
4. General debility, if not dependant on organic disease, or great functional derangement.
5. All local affections, of whatever description.
6. The milder forms of chronic dysentery; acute dysentery can seldom, I apprehend, be a proper subject of treatment in this climate.
7. The milder forms of hepatic disease.
8. Almost all female complaints, properly so called.
9. Muscular rheumatism.
10. Mercurial rheumatism, or periostitis.
11. Incipient pulmonary disease.
12. Dyspepsia, and its concomitants.
13. Neuralgia (pains depending on an affection of the nerves).

2nd Class.

Diseases which are likely to benefit by a residence on the hills, provided the patient has it in his power to premise a sea-voyage, or, in the milder cases, a residence of some months on the coast, so as to remove, or at least entirely

check, the complaint. The duration, or nature of the voyage must of course depend on the nature of the complaint, and other circumstances, to be determined by the judgment of the medical practitioner advising the change. To persons coming down from Bengal, or the more distant parts of the Bombay presidency, the short voyage along the coast will always be of service, often all that is necessary. In other and more serious cases, it must be prolonged for two or three months. Still the advantage of coming to the hills, instead of the long and expensive voyage *to* and *from* the Cape or Europe, the circumstance of being within reach of one's own office, or business, of whatever description, and many others, are so evident as to require no discussion.

1. Hepatic disease, not amounting to organic affection.

2. Dysentery of the severer descriptions, with the same qualifications.

3. Severe mercurial rheumatism, if attended with enlargement of the bones.

4. Chronic enlargement of the viscera, (or Parabysma, as it is termed technically.)

5. Debility, the consequence of long residence in the country, and complicated with functional derangement of the liver, or any other important organ. The sea-voyage in this, and the first two divisions, should be of considerable duration.

3rd Class.

In the first class, or diseases not likely to benefit by this climate, under any circumstances—I would include,

1. Hepatic disease, if organic or complicated with a scrofulous taint in the constitution; at least if the latter has declared itself.

2. Dysentery, under the same circumstances

3. Confirmed pulmonary diseases.

4. The atrophy of advanced years, consequent upon long residence in the country and Indianized habits. To such unhappy subjects, after almost any degree of preparation, cold acts as a complete *extinguisher,* and the only resource left for them is, a prolonged sea-voyage in the warmer latitudes.

CHAPTER XII.

INTRODUCTORY TO THE TABLES OF ROUTES.

THE several routes to the Neilgherries have been so materially altered since Dr. Baikie's time, as to render it necessary to substitute the following remarks and Tables for those contained in the former work.

There are three points which afford the readiest, and in fact, almost the only access to the Hills, from Calcutta, and Bombay:—Madras, on the Eastern coast; Calicut and Cannanore, or Tellicherry, on the Western.*

On arriving at Madras, intending visitors to the Hills generally proceed *viâ* Arcot, Bangalore and Mysore, and the routes (in the Tables,) leading to those places, will guide them; and on application to the Post Office at Madras, they will be furnished with all information necessary as to the course to be pursued (until the railroad and its branches are finished) in laying a dawk from Arcot to Salem, or from Madras to Trichinopoly direct, with routes to those places; the Tables shew the routes from thence to the Hills as now existing.

When the railroad *viâ* Arcot, to which place it has already been completed, is continued (and it is now in rapid progress) to Calicut, with branches to "Meetapollium" and "Seeramogay," at the base of the Hills, passing Salem, with a branch to Bangalore, and one to Trichinopoly (as shewn

* See the Outline Map shewing the routes to the Hills.

in the Map) all travellers will, it may be presumed, proceed by the rail; thus rendering any observations on the present lines of road, except only on that by Bangalore, unnecessary.

When the branch rails to Meetapollium and Seeramogay, which will commence at or near Coimbatore, are completed, the distance from Madras to each Terminus will be about 286 miles; which, at the rate now travelled by the train to Arcot, namely, 20 miles an hour, will enable travellers to reach those points respectively in 14 hours.

Coonoor is distant from Meetapollium, as already mentioned, 15 miles: Kotergherry from Seeramogay, may, in time, be only 12 miles: and Ootacamund is 10 miles from Coonoor.

The branch rail from Bangalore to the main line, will extend to about 65 miles, forming its junction about midway between Vaniembaddy and Tripatoor, about 60 miles from Arcot; and the branch to Trichinopoly from the main line will be about 90 miles; commencing at Salem, 135 from Arcot, and passing "Caroor," will run due east to Trichinopoly.

Allowance must be made for any inaccuracy which may hereafter appear, in regard to the estimated distances between the different places named: as they are merely given from measurements on the Map, and alterations may be made in the directions of the lines in the progress of execution.

From the above observations, it is evident, that, after the completion of these lines, all travellers will proceed from Madras, Bangalore, &c. by rail; and then the present route to the Hills viâ Bangalore and Mysore, will be abandoned and the "Coonoor" and "Seeramogay" Passes become the high roads to the Hill stations; and the "Seegoor" Pass be used only by those who are anxious to see Mysore, Seringa-

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patam, and other places in the same direction, and who, having leisure, will be content with the slower, but still pleasant conveyance of transit carriages from Bangalore.

This leads us to remark on the existing mode of travel from Arcot to the Hills, *viâ* Bangalore and Mysore.

In the first chapter, we adverted to the Establishments of transit carriages kept by Messrs. Burghall and others, at Madras: by them travellers will be furnished with printed tables of stages, and charges generally. We shall give an abstract of those; but we recommend the traveller to send for both kinds of carriage, one for horses, the other for bullocks, in order to enable him to decide in which he will travel from Arcot to Bangalore or Mysore, and perhaps to "Seegoor;" as it is in the contemplation of Messrs. Burghall and Co. to extend their horse-transit to the foot of the Hills.

On seeing these carriages, between which there is a great difference of size, the traveller can arrange as to the accommodation which he will require for himself and luggage: if he should be obliged to change from the horse-transit to that drawn by bullocks, as at present necessary from Bangalore or Mysore, he may be put to much inconvenience, and be obliged to hire two of the smaller conveyances from one or other of those places.

The Editor's experience leads him to recommend the hire of a Bullock Carriage, *expressly providing against there being any change of carriage*, all the way from Arcot to the Hills. This carriage is much easier than the horse conveyance. Bullocks travel at the rate of 4½ to 5 miles an hour, and give much less cause for dissatisfaction.

The Horse Transit is of course, generally speaking, a quicker mode of travelling, averaging about 5 to 6 miles an hour, but the horses are much jaded when the road is

heavy, and travellers are numerous, and they do not work like the more patient and persevering bullock.

It is much to be regretted, that Messrs. Burghall and Co. and the other proprietors, do not exert themselves more than they do, to have better horses and stronger bullocks between Arcot and Bangalore: from the latter place to Ootacamund the bullocks are larger, and kept in good condition.

The visitor, proceeding from Calcutta, should not take Patarrahs, these are of no use, as the roofs of the carriages are rounded so as to prevent their being overloaded. He should only have Portmanteaus or Trunks, and these should not be higher than 11½ inches, as they are put under him in the carriage, which has boards laid across, and on these is the bedding, the traveller reclining as in a Palankeen, but, if he travels light, he may form a seat by taking up two or three of the boards.

Both the abovementioned carriages have a pocket on each side for small articles; but it is absolutely necessary for greater comfort, that the traveller should, at his own expence (a mere trifle), have 4 or 6 more pockets made, of any coarse cloth, to hold wine, beer, &c. (not forgetting a bottle of brandy), and the many small articles he may take with him; and we likewise recommend him to provide himself with a small kettle, teapot, a few plates, &c. in short, all that he would take to insure independence of the deficiencies of a dawk Bungalow all over India; the bungalows, between Arcot and the hills, are generally not deficient in culinary articles, but tea, coffee, sugar, and salt, and a good supply of bread, biscuits, &c. should be laid in *at Madras, Bangalore, and Mysore.*

Most of the dawk bungalows are good, some very superior; especially those built by the liberality of General Cubbin.

If Messrs. Burghall and Co. or others, will not arrange to send the carriage by rail, packed with the travelling luggage (which they would find it their interest to do, for the accommodation of the public) but will only arrange to have it ready at Arcot, the traveller should take those additional pockets, and a packet of tacks and a hammer, and fix them himself at that place.

At Arcot, there is a very comfortable Hotel; but the traveller should, after arranging for his transit, write to the respectable native proprietor of it, intimating his intention of being there by the train of the day; and, should Messrs. Burghall and Co. or the other proprietors of carriages, decline to send his conveyance from Madras, he should not omit to include in his letter to the hotel-keeper, directions to have his transit carriage waiting the arrival of the train; as the present hotel is about 5 miles from the Railway station, and the Terminus is at Amoor, beyond Arcot: and, further, the traveller should, in order to prevent disappointment, desire Messrs. Burghall and Co. to instruct their agent at Arcot accordingly.

A new hotel, however, is in contemplation, to be erected close to the Terminus; and then the difficulties which arise, from the distant position of the present one, will be obviated.

The hire of the different transit carriages is at present as follows; but the traveller will receive a printed Table of charges from Messrs. Burghall and Co., and others, when he engages his transit; and these give the stages, and particulars as to the charges, and existing bungalows on the line.

The Railroad fares for the different class carriages, charges for luggage, and for horses, if any are taken, will be learnt from the manager at Madras; but these are all as low as those of the Bengal railway, if not less.

U 2

The hire of a Horse Transit carriage from Arcot to Bangalore, is, ...Co.'s Rs. 65

Of a Bullock Transit, from Arcot to Bangalore, ... 30

Of a Bullock Transit, from Bangalore to Ootacamund,... 48

The expenses at the bungalows on the line, are very trifling; but it is advisable, in order to secure greater attention and expedition on the part of the drivers of the carriages, to give each of them on a change, of which there are only about four through the whole distance from Arcot to Ootacamund, one or two rupees, and to give the syces and bullock-boys an anna each, at each stage.

The stages are about five miles apart; and appear in the Tables; and in the way-bills furnished by the proprietors of the carriages.

It is also strongly recommended to the traveller, to visit the extensive 'Emporium' of Messrs. Oakes and Co. at Madras, who have as multifarious a display of European goods, as is exhibited in the Exchange rooms in Calcutta; and also the shop of Messrs. Shaw and Co., out-fitters. from these well conducted establishments he will obtain all necessary information as to articles of clothing, &c. adapted to the Hills; and he should not omit to take with him the water-proof clothing, strong shoes, &c. and a most useful kind of legging, or thick gaiter, made of enamelled hide leather, which has a flat iron plate neatly enclosed at the side, keeping the gaiter firm, and the tops covering the knees: this is much better than the old mud boot; or new hunting boot; and a friend of the Editor was saved by the plate from a fractured leg, on his pony falling on slippery ground. These gaiters are known by the name of "antigropolos" and are patented in London; and are also made by the boot-makers of Calcutta.

There is a good hotel at Bangalore, where the traveller

should rest and there study the Transit way-bills; and, having had the experience of the rate of travelling from Arcot, should make his calculations for leaving Bangalore at such an hour as will insure his arrival at the bungalow at Mysore, 87 miles, in about 20 hours, and from thence to that at "Goondelpet," 27 miles, by midnight.

He should there take refreshment, and put on warmer clothing, and leave at 4 A. M. or earlier; and should have his water-proof coat, boots, &c. at hand, so as to be prepared for mounting his pony on reaching "Seegoor;" and ladies, who intend to ride up the pass, should put on their habits in the carriage, as they approach the village of Seegoor, in order to avoid delay at that place.

Seegoor being about 29 miles distant from Goondelpet, and almost all the road being an ascent, it will be evident that the traveller should attend strictly to the advice to leave the latter place by 4 A. M. and he will thus be enabled to breakfast at the Kulhutty bungalow, near the head of the pass.

Persons going to the Hills by the "Coonoor Pass," should adopt similar precautions as to putting on warm clothing, &c. as abovementioned, at Meetapollium; and arrange to leave that place at day-light, as the journey from thence to Coonoor is tedious when travelling in a palankeen or tonjohn; therefore all who can ride should go on ponies.

The same directions generally will apply for the guidance of travellers from Bombay, before ascending the "Sispara or Koondah Pass;" who should make their preparations at the bungalow situated at "Sholaikul," or at that of "Walakaud," at the foot of the Pass.

At Calicut, to which travellers from Bombay are now conveyed by the Steamers, passing it on their way to Galle, there is a public bungalow.

At Tellicherry, and Cannanore also, there are bungalows, and other accommodations for travellers.

Having given the above directions and information, for the guidance of travellers, we shall now add the Tables of routes and distances from each of the places before mentioned, generally, to and from the Hills.

Since penning the foregoing remarks, the Editor has received a communication from a friend in the Public Works Department of the Madras Government, which he regrets did not reach him in time to modify the observations made in treating of the anticipated new road to Kotergherry from "Seeramogay."

The intimation conveyed to the Editor is, to the effect, "That a first class carriage road is under estimate to be made from Seeramogay to Kotergherry, by such easy gradients as would necessarily extend the distance to 30 miles, but, as it would be travelled with comfort by carriages, it would be altogether a more desirable trace then having a tedious Ghaut to ascend. This new road would be continued to Ootacamund, and then, for the first time, a carriage road would connect it with Kotergherry, a desideratum which has too long prevented daily intercourse between the two stations.

"There would also be branch carriage roads to Coonoor and Jackatalla; and, if this projected road is sanctioned by the Madras Government, it will be completed by the time the intended branch line of railroad is extended to Seeramogay."

This intimation, however, is accompanied by a remark that another project is also under consideration, namely, to form the approach up the Pass to Coonoor by means of an inclined plane and rails, worked by a water-wheel; but even then the carriage roads would be made from Coonoor to Ootacamund and Kotergherry, and from the latter to Jackatalla.

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With reference to the main line of rail road and converging branches, the Editor is confirmed in the belief, before expressed, that the whole will be completed within two years and a half; the latest information he has received states, that it will soon reach Vaniembaddy, and that it is expected to be carried to Salem in the course of 1857—; by which time, the greatest portion of the line between Salem and Calicut will also be completed.

TABLES OF ROUTES.

FROM MADRAS TO OOTACAMUND.

VIA ARCOT AND BANGALORE, ACCORDING TO THE TRANSIT TABLES OF STAGES.

	Bungalows and Hotels.	M.	F.
To Arcot by Rail	B & H	71	0
FROM ARCOT			
To Chittoor, or Woorungapally	B	29	0
Vincatagherry	B	12	0
Palmanair	B	12	0
Moolragle	B	27	0
Colar	B	15	0
Nursapoor	B	17	0
Ooscottah	B	8	0
Bangalore	B & H	17	0
Total, .	Ms.	137	0
FROM BANGALORE			
To Kingery	B	10	7
Biddeedee	B	10	4
Closepett	B	9	5
Chinnapatam	B	7	5
Muddoor	B	11	2
Mundium	B	11	7
Seringapatam	B	16	4
Mysore	B	9	4
Total, .	Ms.	87	6
FROM MYSORE			
To Sindhully	B	9	4
Baigoor	B	9	0
Goondelpet	B	8	3
Bundipoor	B	11	0
Tippacaudoo } Jungle		7	5
Seegoor } Jungle		10	4
Kullutty	B	4	0
Ootacamund	H. H	9	0
Four miles of which to head of pass ..			
Total,..	Ms.	69	0
Total distance.	Ms.	364	6

FROM MADRAS TO OOTACAMUND

BY ARCOT, VELLORE, VANIEMBADDY, SALEM, AVENASHY AND COIMBATORE.

	Bungalows and Hotels.	M.	F.
To Arcot by rail,	B. H.	71	0
FROM ARCOT			
To Vellore,	B.	13	6
Pallicondah,	B.	12	7
Totalum,		7	7
Amboorpett,	B.	9	7
Vaniembaddy,	B.	10	4
Tripatoor,	B.	13	7
Muttoor,	B.	13	5
Innoomatoor,	B.	11	4
Darampoory,		13	0
Adamancotah,	B.	5	4
Topoor Choultry,	B.	11	7
Poojariputty,	B.	8	3
Chalk Hills,	B.	11	7
Salem,	B.	4	6
Macdonald's Choultry,	B.	12	7
Sunkerrydroog,	B.	11	0
Coomarpallium,	B.	12	4
Sittodoo,		4	5
Peroondooray,	B.	10	0
Chungapully,	B.	12	4
*Avenashy,	B.	10	6
Karmottumputty,	B.	8	6
Ramanoojum Chuttrum,		8	5
Coimbatore,	B.	8	7
Total miles,		320	3

* N. B.—See Tables in pages 154 and 156, for the Routes from Avenashy to Ootacamund, Coonoor, and Kotergherry.

FROM OOTACAMUND TO COIMBATORE AND PAULGHAUTCHERY

By the Coonoor Pass and Meetapollium.

	Bungalows and Hotels.	M.	F.
To Coonoor,	B.	10	2
Meetapollium,	B.	14	2
Goodaloor,	B.	11	0
Coimbatore,	B.	11	6
Muddookurray,		5	6
Walaiyar,		8	7
Gunjeecotary,		8	4
Paulghautchery,		7	3
Total miles.		77	6

FROM OOTACAMUND TO COIMBATORE

By Kotergherry and Meetapollium.

To Kotergherry,	B.	14	6
*Meetapollium.	B.	11	6
Goodaloor,	B.	11	0
Coimbatore,	B.	11	6
Total miles,		49	2

* A foot path only,—difficult even for Ponies.

FROM OOTACAMUND TO COIMBATORE

By Kotergherry and Seeramogay Pass.

To Kotergherry,	B.	14	6
*Uddewarum, or Seeramogay,	B.	12	7
Goodaloor,	B.	15	3
Coimbatore,	B.	11	6
Total miles,		54	6

* See remarks at the close of the introduction to these Tables.

FROM MADRAS TO TRICHINOPOLY

By Sadras, Alumparva, Pondicherry, Cuddalore and Combaconum.

	Bungalows and Hotels.	M.	F.
To Sholunganellore,		13	1
At Wanien Choury, 5½ M.	B.		
Tripooloor, . . .		13	1
Sadras Fort, ...	B.	14	2
Chikanacoopum, . . .		13	3
Alumparva, ...	B.	8	6
Cooneemode, . . .		13	3
Pondicherry	B.	12	1
Munjeecoopum, or Cuddalore, . .	B.	11	7
Chonian Choultry, . . .	B.	9	1
Ramalinga or Poodoo Chuttrum, .	B.	6	7
Ammaipettah, ...	B.	11	1
Sheally, ...	B.	10	4
Myaveram, ...	B.	13	1
Teroowallungaudoo, . . .	B.	9	4
Combaconum, ...	B.	12	4
Cavestellum, ...	B.	9	1
Triviar, ...	B.	11	4
Poodoo Chuttrum . . .		11	3
Anicut, ...	B.	9	0
Trichinopoly, . . .	B.	11	4
Total miles, .		225	2

N. B.—Travellers to Trichinopoly and Salem, should enquire of Messrs. Tayler and Co. at Madras, as to the means of travelling by their Transit Carriages to these places.

FROM TRICHINOPOLY TO OOTACAMUND

By Poodoopalium, Caroor, Kangyam, Avenashy, Meetapollium and the Coonoor Ghaut.

	Bungalows and Hotels.	M.	F.
To Nungaveram, ...	B.	12	5
Poodoopollium, ...	B.	10	6
Mummawassy, ...	B.	13	3
Caroor, ...	B.	10	2
Paramutty, ...	B.	12	4
Vellacovil, ...	B.	13	5
Kangyam	B.	11	4
Natchipallium, ...		10	1
Nelloor 3½ miles, . . .	B.		
Tirpoor, ...		6	4
Avenashy, ...	B.	8	7
Unnoor, ...	B.	12	6
Meetapollium, ...	B.	12	4
Coonoor, ...	B.	14	2
Total miles, .		149	5

FROM TRICHINOPOLY TO OOTACAMUND

By Avenashy, Seeramogay and Koteragherry.

	Bungalows and Hotels.	M.	F.
To Avenashy, see preceding table, . .	B.	110	1
Unnoor, ...	B.	12	6
Seeramogay, ...	B.	11	4
Uddiwaram, ...	B.	2	1
Koterghery, ...	B.	12	7
Ootacamund, ...	B.	14	6
Total miles, .		164	1

FROM CALICUT TO OOTACAMUND

By water to Arriacode, Sispara Ghaut and the Avalanche Bungalow.

	Bungalows and Hotels.	M.	F.
From Calicut by the Beypoor river, embarking at the Bridge,			
To Arriacode,	B.	35	0
Yeddamunna,	B.	7	5
Wundoor,	B.	7	3
Snolaikul,	B.	10	4
Walakaud,	B.	5	1½
Sispara,	B.	5	7½
Avalanche,	B.	17	7
Ootacamund,	B.	13	4
Total miles,		103	3

FROM OOTACAMUND TO CANNANORE

By Neddiwuttum, Goodaloor, Manantoddy, and the Peria Pass.

	Bungalows and Hotels.	M.	F.
To Pykarra,	B.	10	6
Neddiwuttum,	B.	7	1
Goodaloor,	B.	4	1
Nelliahm,	B.	16	0
Gunnapuddywuttum,	B.	15	0
Punnamurtacota,	B.	15	3
Manantoddy,	B.	7	7
Dindoomullah,		5	1
Peria,	B.	9	3
Neddooboorenchalay,	B.	7	0
Canote,	B.	8	4
Cotiangaddy,		9	0
Cannanore,	B.	14	0
Total miles,		129	2

N. B.—A new road is in progress of execution from Ootacamund to the Beypoor river, passing Neddiwuttum, and thence by Nadkarry and Carcoor, as noticed in page 23.

FROM OOTACAMUND TO CANNANORE AND TELLICHERRY

By Neddiwuttum, Goodaloor, Manantoddy, the Cotiaddy Ghaut and Cotaparamba.

	Bungalows and Hotels.	M.	F.
To Pykarra, ...	B.	10	6
Goodaloor, ...	B.	11	2
Nelliahum, ...	B.	16	0
Gunnapuddywuttum, ...	B.	15	0
Punnamurtacota, ...	B.	15	3
Manantoddy, ...	B.	7	7
Poolinjal, . . .		7	6
Matalet, ...		8	2
Cotiaddy, ...	B.	11	0
Cotipooram, ...		6	4
*Parata Coonah, . . .		8	5
Cotaparamba, ...	B.	8	2
Cannanore, ...	B.	14	3
Total miles, .		141	

* Hence to Tellicherry, by Panoor is Ms. 9. 2.

FROM PAULGHAUTCHERRY TO CALICUT

By Luckricotah, Angadipooram, Munjairy, Arriacode and the Beypoor River.

To Luckricotah, ...	B.	15	4
Cherrapoolchairy, ...	B.	13	2
Angadipooram, ...	B.	11	0
Munjairy, ...	B.	12	5
Arriacode, ...	B.	11	1
Calicut, by the Beypoor river, . .	B.	35	0
Total miles, .		98	2

FROM PAULGHAUTCHERRY TO CALICUT

By Luckricotah, Angadipooram, and Malliapooram.

	Bungalows and Hotels.	M.	F.
To Luckricotah, . . .	B.	15	4
Cherrapoolchairy, ...	B.	13	2
Angadipooram, . . .	B.	11	0
*Malliapooram, ...	B.	11	2
Chairnaud, . . .		12	5
Cuddalwundy, ...		9	3
Calicut, ...	B.	10	1
Total miles, .		83	1

FROM PAULGHAUTCHERRY TO SEERAMOGAY, AND DANAIKENCOTTA

By Coimbatore.

To Gunjeecotay, . . .		7	3
Walaiyar, ...		8	4
Muddookurray, . . .		8	7
Coimbatore, ...	B.	5	6
Goodaloor, . . .	B.	11	6
Seeramogay, ...	B.	13	0
Danaikencotta, . . .		10	1
Total miles, . .		65	3

* This road from Malliapooram to Calicut is the best.

APPENDIX.

APPENDIX,

METEOROLOGICAL TABLES, KEPT BY DR BAIKIE

FOR THE YEARS

Abstract Register of the Weather at Ootacamund,

Month.	Barometer. Maximum.	Barometer. Minimum.	Barometer. Mean.	Mean of Thermometer attached to Barometer.	Thermometer in shade. Maximum.	Thermometer in shade. Minimum.	Thermometer in shade. Mean.	Thermometer in shade. Greatest daily range.	Rain, square inches.
The months of Jan. and Feb. nearly the same as in the next Table.				o	o	o	o	o	
March,...........	23,290	23,060	23,175	61	72	44	58	21 66 to 45	none.
April, ...	23,210	22,960	23,085	63	73	51	62	21 73 to 52	2.233
May, ...	23,026	22,940	22,983	64½	70	51	60½	15 70 to 55	5.745
June, ...	22,940	22,880	22,910	63½	68	51	59½	11 66 to 55	3.880
July, ...	22,900	22,822	22,861	63	65	51	58	10 65 to 54	2.170
August, ...	22,840	22,800	22,820	61	67	51	59	13 67 to 54	4.102
September, ...	22,840	22,730	22,785	60½	60	53	56½	8 62 to 54	8.960
October, ...	23,100	23,012	23,056	60	67	49	58	14 67 to 53	7.300
November, ...	23,140	23,000	23,070	59½	66	46	56	17 63 to 46	7.400
December, ...	23,220	23,128	23,174	57	63	42	52½	21 63 to 42	.460

Mean height of the Barometer, ... 22,991
Ditto ditto Thermometer attached, ... $61\frac{3}{10}$
Ditto ditto ditto during the day, ... $67\frac{1}{10}$
Ditto ditto ditto during the night, ... $48\frac{9}{10}$
Ditto ditto ditto day and night,.................. $57\frac{9}{10}$
Mean daily range, ... $15\frac{8}{10}$

No. I.

AT OOTACAMUND, ON THE NEILGHERRIES, 1831, AND '32.

on the Neilgherries, for the year 1831.

No. of days. Rain.	Showers.	Cloudy.	Fair.	Prevailing winds.	Remarks.
..	4	3	24	N. N. E. to N. E.	Weather remarkably clear and fine—sun very powerful from 8 to 10, and from 12 to 2—evenings and mornings clear, cold, and bracing—frost once or twice.
..	10	3	17	N. N. E. S. E.	Weather milder than in March—some light showers, but very partial—two thunderstorms with very large hail.
1	19	..	11	S. W.	Weather threatening several days of frequent showers—one day very heavy rain—atmosphere close—frequent thunder, and sheet lightning at night.
..	11	..	19	S. S. W. S. W.	Monsoon appeared to set in about the 4th, but the weather cleared up, and was very fine during the greater part of the month—temperature very equable.
1	5	4	21	S. S. W.	Usually a rainy month—this year very fine, having only one day heavy rain—Koondah Hills covered with clouds, upper portion of range clear.
3	10	..	17	S. S. W.	Disagreeable weather—occasional heavy rain and frequent showers—cold and damp to the feelings.
5	5	10	11	S. E. E. S. W.	Usually a fine month—this year rainy, cold, and uncertain—occasional thunder and much sheet lightning.
4	11		16	N. E.	Very variable and uncertain weather, consequent on the change of monsoon—heavy rain at Kotergherry, and frequent partial mists here.
5	3	4	18	N.N.E.E. N. E.	Several days of very heavy and constant rain, but on the whole a very fine month—some thunderstorms—air keen.
.	2	4	25	N.N.E.E. N. E.	A beautiful month—much fog at the beginning, afterwards clear, cold, and bracing—occasional hoar-frost on the hills.

Quantity of rain fallen, square inches, ...	42,250
No. of days heavy rain, ...	19
—— ditto occasional showers with fair intervals,	80
—— ditto cloudy, ...	28
—— ditto clear and fine, ...	179
Add Jan. and Feb. ditto, ...	59
	365 days.

Abstract Register of the Weather kept by Dr. Baikie at Ootacamund, for the year 1832.

Months.	Barometer corrected to 32° Faht. Maximum.	Minimum.	Mean.	Thermometer. Maximum.	Minimum.	Mean.	Greatest daily range.	Rain. Square inches.	No. of days. Showers.	Fair.	Prevailing winds.	Remarks.
				°	°	°	°					
January, ...	23,375	23,081	23,228	67	39	53	24	None.	..	31	N. E.	A very fine month, clear, cold, and bracing—frequent hard frost—wind very cold.
February, ...	23,364	23,081	23,221	69	38	53.5	31	.20	1	28	N. E.	Much the same as the last—hard frost in the valleys at night—wind cold.
March,...........	23,052	23,006	23,029	70	47	58.5	19	1.48	6	25	N. E.	Milder than the two preceding months—refreshing showers towards the close—sun occasionally hot.
April, ...	23,066	22,984	23,025	73	53	63	17	2.74	9	21	N. E.	A mild month—occasional showers, but very fine in the intervals.
May, ...	23,032	22,960	22,996	76	53	64.5	19	4.24	11	20	N.	This month was finer than usual—occaly. hot a few hours, but with fine intervals—vegetation most luxuriant.
June, ...	22,970	22,836	22,903	73	52	62.5	15	4.18	17	13	S. W.	Monsoon later of setting in—not fairly established till the 19th—weather cool and pleasant.
July, ...	22,826	..	..	58	52	55	16	7.31	21	9	W. N. W.	Very wet and disagreeable—constant drizzling rain.
August, ...	22,355	..	..	62	51	56.5	11	1.70	13	18	W. S. W.	A fine month—some rain towards the end.
September, ...	22,807	..	..	64	51	57.5	13	9.92	13	17	W. N. W.	Rainy, blustery, and disagreeable during the first half—fine weather the last part of the month. [and dry.
October, ...	..	..	..	.		..	..	3.89	..	..	..	Some rain in the early part of the month—the rest cold
November, ...	No	obser	vations	..		..	.	..	..	..	..	No rain during these months—clear, cold, and dry.
December, ...	..						..	..		..	..	

Barometer.		Thermometer.		Rain.		No. of days registered.	
		Mean maximum, ...	68				
Mean maximum,	23.038	Mean minimum, ...	48.5	Square inches, ...	35.66	Fair, ...	182
Mean minimum,	22.991	General mean, ...	58.25		1829. 1830. 1831. 1832. 1833. mean.	Showery, ...	91
General mean,...	23.014	Mean daily range, ...	18.33	Annual means,	42.68, 58.40, 46.56, 33.84, 12.24, 44.88		

N. B.—The Register for 1833 imperfect. Total Rain about 50 inches.

ABSTRACT *of* METEOROLOGICAL OBSERVATIONS *made at Ootacamund from the* 1st *June*, 1829, *to the* 31*st May*, 1836, *inclusive.*

NAMES OF THE MONTHS.	MEAN TEMPERATURE FROM THE 1ST JUNE, 1835, TO 31ST MAY, 1836, INCLUSIVE.							MEAN TEMPERATURE AND QUANTITY OF RAIN—THE MEAN OF 7 YEARS FROM 1ST JUNE, 1829, TO 31ST MAY, 1836.							PREVAILING WINDS FOR EACH MONTH—THE MEAN OF SEVEN YEARS.
	Mean Temperature about 2 P. M.	Mean Temperature about sun-rise.	Mean Temperature for the whole month.	Extreme range of Ther. From	Extreme range of Ther. To	Rain Pluviometer. Inches.	Rain Pluviometer. 100ths.	Mean Temperature about 2 P. M.	Mean Temperature about sun-rise.	Mean Temperature for the whole month in 7 years.			Rain. Inches.	Rain. 100ths.	WINDS.
January, ...	63.8	36.1	50.4	67.	31.	0	0	62.9	40.7	51.8			0	2	Easterly N. E.
February, ...	63.8	39.8	51.9	67.	36.	0	75	64.2	43.4	53.8			0	39	Ditto ditto.
March,..........	66.4	45.8	56.	70.	38.	0	07	67.3	48.2	57.8			0	97	Ditto ditto.
April, ...	70.6	53.2	61.	76.	50.	1	51	67.2	51.3	59.8			4	22	S. E. E. N. E.
May, ...	69.6	55.8	61.8	75.	52.	5	55	67.9	51.3	61.6			5	83	S. W. N. Variable.
June, ...	62.	50.4	56.2	68.	46.	4	08	61.5	53.	57.2			6	51	South westerly.
July, ...	63.4	50.	56.6	71.	46.	2	70	60.9	52.2	56.5			4	08	Ditto.
August, ...	64.2	50.6	56.2	68.	46.	6	26	61.6	51.6	56.6			5	13	Westerly.
September, ...	65.3	50.8	56.8	72.	46.	9	29	62.3	52.	57.1			6	57	S. W. N. W. N. E. S. E. variable.
October, ...	65.	50.2	56.8	68.	43.	6	21	62.	52.5	57.2			8	31	North easterly—variable from S. E.
November, ...	63.4	46.4	51.6	67.	39.	4	60	60.5	47.4	53.9			4	11	Easterly.
December, ...	62.4	44.8	53.1	65.	33.	0	92	60.4	41.3	52.3			1	43	Ditto N. E.
Annual Mean,...	64.9	47.8	56.			41	94	63.2	49.3	56.2 $\frac{1}{2}$			47	78	

Abstract showing the average temperature, &c., throughout the year 1847, on the Neilgherry Hills, taken from Captain Ouchterlony's Memoir of that year.

At OOTACAMUND, 7,300 Feet above the level of the Sea.

Month.	Mean Temperature. At Sunrise.	Mean Temperature. At 2h. 40m. P. M.	Mean Temperature. At Sunset.	Mean range of the Thermometer. Sunrise to Sunset.	Rain in Inches.	Remarks.
	°	°	°	°	"	
January ...	42	63	58	21	1	Cold North-Easterly winds prevail.
February ...	44	65	60	21	1	Do. do. do.
March	49	68	63	19	2	Do. and dry do. do.
April	54	68	63	14	5	And dry do. do.
May	54	68	63	14	6	Commences to vary to S. W.
June	53	64	59	10	8	S. W. Monsoon sets in: strong wind.
July	52	62	57	10	7	S. W. and W. winds blow.
August ...	52	62	57	10	6	Wind begins to vary to W. & N. W.
September .	52	62	56	10	7	Wind N. W. and towards end N. E.
October ...	51	62	56	10	9	N. E. and Easterly winds prevail.
November ..	49	61	55	12	5	N. E. winds blow, fresh, clear.
December ..	45	60	55	15	3	Do. do. often violently.
				Total.	60	Inches of rain.

At KOTERGHERRY, 6,100 Feet above the level of the Sea.

Month.	Mean Temperature. At Sunrise.	Mean Temperature. At 2h. 40m. P. M.	Mean Temperature. At Sunset.	Mean range of the Thermometer. Sunrise to Sunset.	Rain in Inches.	Remarks.
January. ...	51.5	66	60	15	2	N. E. and N. W. winds prevail.
February ...	52.5	67	63	15	3	Do. do. rain very uncertain.
March	54	67	63	13	6	Winds variable N. E. to S. E.
April	56	68	64	12	10	Do. do. N. E. to E. & S. E. rain uncertain.
May	56.5	68	64	12	2	Do. from N. E. to N. W. & West.
June	58	69	65	11	2	Do. from N. W. to S. W. rain var.
July	60	70	65	10	4	S. W. monsoon winds, but light & var.
August......	60	71	65	11	2	N. W. winds prevail in this month.
September..	59	69	64	10	2	Do. do. veering to W.
October ...	56	68	63.5	12	10	Do. do. light and variable.
November..	54	67	61	13	2	N. E. winds veering to N. W.
December. .	52	66	60	14	5	Winds generally from the N. gusty.
				Total.	50	Inches of rain.

Temperature of the Air at Bombay House, the residence of D. Ross, Esq. at Ootacamund, nearly 8,000 *feet above the level of the sea, being the results of daily observations noted by the aid of a fix'd patent self-registering Thermometer on the scale of Faht. from the* 1*st of April*, 1853, *to* 31*st of August*, 1856.

Date.	Average Maximum.	Average Minimum.	Average on Mean of Day & Night.	Mean of four years.
1853.				
April,	65.125	51.25	58.1875	
May,	68.	53.	60.5	
June,	64.	51.	57.5	
July,	59.75	48.75	54.25	
August,	61.	48.5	54.75	
September,	63.	50.	56.5	
October,	60.5	49.	54.75	
November,	58.5	45.75	52.125	
December,	60.75	42.5	51.625	
1854.				
January,	62.75	44.5	53.625	
February,	62.75	43.5	53.125	
March,	66.5	48.5	57.5	
April,	67.5	53.5	60.5	
May,	68.	52.	60.	
June,	66.5	50.5	58.5	
July,	60.5	49.5	55.	
August,	62.5	49.	55.75	
September,	61.25	48.5	54.875	
October,	62.5	49.	55.75	
November,	58.5	46.5	52.5	
December,	60.	43.	51.5	
1855.				47.363
January,	57.5	42.	49.75	
February,	60.	43.	51.5	
March,	62.75	43.25	53.	
April,	64.5	50.	57.25	
May,	68.	52.	60.	
June,	65.	49.875	57.4375	
July,	61.75	50.	55.875	
August,	61.5	48.	54.75	
September,	61.5	48.	54.75	
October,	59.625	46.5	53.0625	
November,	59.625	43.125	51.375	
December,	56.5	42.334	49.417	
1856.				
January,	58.125	42.25	50.1875	
February,	60.125	43.625	51.875	
March,	63.6	48.6	56.1	
April,	64.5	51.	57.75	
May,	61.334	49.334	55.334	
June,	60.	47.8	53.9	
July,	60.625	48.25	54.4375	
August,	58.	47.8	52.9	

Abstract of Thermometric Observations taken at Ootacamund by Dr. Baikie, in the years 1831, '32, '33, *and by Mr. Ross in the years* 1853, '54, '55, '56.

Months.	Maximum.							Minimum.							Average derived from whole number of observations over 7 years.				Maximum.		Minimum.	
	1831.	1832.	1833.	1853.	1854.	1855.	1856.	1831.	1832.	1833.	1853.	1854.	1855.	1856.	Mean Maximum.	Mean Minimum.	Mean range between day and night.	Mean monthly temperature.	Mean by Dr. Baikie.	Mean by Ross.	Mean by Dr. Baikie.	Mean by Ross.
Jan. …	..	67	64.	..	62.75	57.50	58.125	.	39	41.	..	44.50	42.00	42.25	61.875	41.75	20.125	51.81	65.50	59.46	40.00	43.25
Feb. …	.	69	67.	..	62.75	60.00	60.125		38	45.	..	43.50	43.00	43.625	63.775	42.625	21.150	53.20	68.00	60.96	41.50	43.34
March,	72	70	74.	..	66.5	62.75	63.6	44	47	50.	..	48.50	43.25	48.60	68.14	46.89	21.250	57.51	73.00	64.20	47.00	46.78
April,	73	73	73.	65.125	67.5	64.5	64.5	51	53	53.	51.25	53.50	50.00	51.00	68.66	51.82	16.840	60.24	73.00	65.53	52.33	51.44
May,	70	76	70.	68.00	68.00	68.00	61.331	51	53	53.	53.00	52.00	52.00	49.331	68.76	51.90	16.860	60.33	72.00	66.34	52.33	51.56
June,	68	73	66.	64.00	66.5	65.00	60.00	51	52	50.	51.00	50.50	49.875	47.8	66.07	50.310	15.760	58.19	69.00	63.80	51.00	49.80
July,	65	58	64.3	59.75	60.5	61.75	60.625	51	52	53.2	48.75	49.50	50.00	48.25	61.42	50.38	11.040	55.90	62.40	60.66	52.00	49.10
Aug. …	67	62	66.7	61.00	62.5	61.5	58.00	51	51	51.1	48.5	49.00	48.00	47.8	62.67	49.48	13.190	56.07	65.20	60.75	51.00	48.32
Sept.	60	64	65.48	63.00	61.25	61.5	..	53	51	53.61	50.00	48.50	48.00	..	62.53	50.69	11.840	56.61	61.90	61.91	52.50	48.83
Oct. …	67	.	..	60.5	62.5	59.625	..	49	.	..	49.00	49.00	46.5	..	62.41	48.38	13.030	55.39	67.00	60.87	49.00	48.20
Nov. …	66	..	..	58.5	58.5	59.625	..	46	.	..	45.75	46.5	43.125	..	60.66	45.35	15.310	53.01	66.00	58.88	46.00	45.125
Dec. …	63	..	..	60.75	60.00	56.5	..	42	.	..	42.5	43.00	42.334	..	60.06	42.46	17.600	51.26	63.00	59.10	42.00	42.61
Mean from the year's observations.		..	..	..	..	..	..		..	..	..	..	..	..	..	..	16.166	..	67.167	61.87	48.05	47.363

Calcutta, 1856.

T. OLDHAM.

A Table exhibiting the monthly and yearly mean temperature of the Air at Calcutta, Bombay, and Madras; and at Ootacamund on the Neilgherries; and in the City of London: with average falls of rain in England and the Neilgherries. Compiled from different memoirs, &c.

	CALCUTTA.			BOMBAY.			MADRAS. At the Observatory.			THE NEILGHERRIES. Ootacamund, 7,416 feet above the level of the Sea.							ENGLAND. London from Daniel's Meteorological Essays.					
	Mean Maximum.	Mean Minimum.		Mean Maximum.	Mean Minimum.					Monthly Means.				Range.		Average fall of Rain for 2 years.				Range.		Average fall of Rain for 2 years.
	3 P. M.	6 A. M.	Mean Temperature.	4 P. M.	11 A. M.	Mean Temperature.	Mean Maximum.	Mean Minimum.	Mean Temperature.	6 A. M.	3 P. M.	9 P. M.	Mean.	From	To	Inches.	Mean Maximum.	Mean Minimum.	Mean Temperature.	From	To	Inches.
January,	75,1	63	69,1	78	76	77	82,2	74,1	78,5	45¾	57¼	47.7	50¼	59	31	1.17	39.6	32.6	36.1	52	11	1.483
February,	80	67	73	78	76	77	84,5	73,8	80,7	45¾	59½	49¾	51¾	63	39	0	42.4	33.7	38.	53	21	.746
March,	88,1	78	77,1	81	80	80	87,6	78,7	84,9	58	63	62	61	65	55	2.47	50.1	37.7	43.9	66	24	1.440
April,	95,1	79,1	87,1	84	83	83	92,0	84,1	89,4	58	63¾	62½	61½	64	57	3.10	57.7	42.2	49.9	74	29	1.786
May,	97,1	80,1	88,7	85	85	85	94,3	85,1	90,6	57	63¼	63	61¼	65	57	5.21	62.9	45.1	51.	70	33	1.853
June,	88	78	83	86	85	85,1	90,5	81,2	87,9	57¼	60	58	59	64	50	5.25	69.4	48.1	50.7	90	37	1.830
July,	86,1	78,1	82,1	81	81	81	92,6	85,3	89,0	52¾	61¾	54¼	56¼	66	49	10.37	69.2	52.2	61.	76	42	2.516
August,	86,2	79,3	82,2	84	84	84	89,9	83,1	86,6	57	60¼	56¾	58	63	48	11.77	70.1	52.9	61.6	82	41	1.453
September,	86	78	82	80	79	79	89,7	83,3	87,0	54¼	60¾	58	57¾	69	49	2.40	65.6	50.1	57.8	76	36	2.193
October,	89,2	76,1	82,3	85	84	84,1	87,8	82,4	85,7	50¼	62	53¾	56	64	44	7.41	55.7	42.1	48.9	68	27	2.073
November,	78	65,2	71,4	85	84	84,1	84,3	80,1	82,7	50¼	61¾	52¼	54¾	63	43	10.86	47.5	38.3	42.9	62	23	2.400
December,	75	59	67	81	80	80,1	80,2	76,0	78,0	46¼	60	48¾	51½	63	37	3.87	42.2	35.4	39.3	55	17	2.426
Annual means,	85,3	73,4	78,3	82,4	81,5	81,4	87,9	80,8	85,1	52¾	61	55¼	56½	64	46½	63.88	56.1	42.5	49.5	686	28.4	22.199

RECAPITULATION

Mean Temperature of the Air in London, ... 49.5°
Ditto ditto ditto on the Neilgherries, ... 56.5°
N. B. Observations taken at the Observatory.

Mean Temperature of the Air at Madras, ... 85.1°
Ditto ditto ditto Bombay, ... 81.4°
Ditto ditto ditto Calcutta, ... 78.3°

APPENDIX, No. II.

TABLE OF HEIGHTS OF MOUNTAINS.

Dodabet Range.	
Bevoybetta, ...	8488
Coonoor, ...	5886
Dodabetta, ...	8760
Davursolabetta, ...	8380
Hokulbetta, ...	7267
Koondamoya, ...	7816
Ootacamund, ...	7416
Tamburbetta, ...	7292
Koondah Range.	
Avalanche Hill, ...	8502
Davebetta, (Sugar-loaf Hill,)	6571
Koondah Peak, ...	8353
Makoortee Peak, ...	8402
Kotergherry Range.	
Dimhutty, ...	6330
Kotergherry, ...	6571
Kodanad, ...	6815
Koondabetta, ...	6555
Oorbetta, ...	6915
Low Country, adjoining.	
Coimbatore Palace, ...	1483
Danaikencottah Fort, ...	1066
Meetapollium, ...	1000
Seeramogay Bungalow, ...	1100

Appendix, No. III.

REVISED RULES OF THE OOTACAMUND CLUB, 1856.

Rule I.

The Ootacamund Club shall consist of an unlimited number of Subscribers, composed of Gentlemen in Her Majesty's or the Honorable Company's Service, and others moving in general Society.

Rule II.

1. Every Candidate must be proposed by one member and seconded by another member. His name, accompanied by a statement shewing in what capacity he is eligible, together with that of his proposer and seconder, shall be given to the Secretary, who will post it in the Reading room for ten days, after which a ballot for the admission of the candidate will take place. — *Election of member how effected.*

2. Ten Votes are required to render the ballot valid, and one black ball in ten will exclude. — *Number of votes required to render election valid.*

3. Pending the ballot, and with the sanction of the Committee, a candidate may be admitted as an Honorary Member. — *Admission as an Honorary Member.*

Rule III.

1. The Entrance donation shall be Rs. 35. — *Entrance donation.*

2. Payable by equal instalments, within two months after election, or earlier, in the event of the member's departure from the Hills. — *Donation how payable.*

3. On failure of payment within the time specified, the proposer of the member will be held responsible for the amount, and such defaulter shall forfeit his election. — *Penalty for nonpayment as above.*

Members having forfeited their election how re-admissable.

4. Members who shall have forfeited their election as above, or whose names may have been removed from the list of subscribers, shall be re-admissable by ballot once only, and on payment of double the amount of Entrance donation, and on the occasion of a party being proposed for re-admission the minute of the General Committee recording the reason of his having ceased to be a Member, shall be suspended in the reading room for general information.

Double donation.

5. The penalty of double donation shall be paid at once, and with the same responsibility to the member and proposer as in Sec. 3 of this rule.

6. Absent members are requested to pay, while in the Madras Presidency, a monthly subscription of 8 annas, or an annual subscription of 6 rupees.

7. The monthly subscription of 8 annas, or annual subscription of 6 rupees, is payable by all absent Members, in the Madras Presidency, who may have been proposed and elected, after the 15th May, 1856.

RULE IV.

Subscriptions.

1. The Subscription of Members residing in Ootacamund shall be rupees five, and beyond its precincts, or elsewhere on the Hills, Rupees two and a half per mensem.

Families of absent, members.

2. Subscription, payable by families of absent members, wishing for supplies, &c. from the Club shall be rupees two and a half per mensem.

Subscription for broken periods.

3. Subscription, for a broken period of a month, under 15 days, shall be rupees two and a half for that month, and, above 15 days, rupees five, or rupees one and a quarter and rupees two and a half, for those residing beyond the precincts of Ootacamund.

Rule V.

1. The Concerns of the Club, and its internal arrangement, shall be managed by a General Committee consisting of seven members including one House Member if available.

Management of Club, to whom intrusted.

2. The House Member, to be elected, from time to time, by those residing within the Club.

House Member.

3. The remaining Members of Committee, to be elected by the Members at their annual general Meeting.

Members of Committee how elected.

4. But, with a view to keeping up the numerical strength of the Committee, throughout the Year, the Committee may fill up vacancies that occur during intermediate periods.

5. The Committee will appoint its own President.

President.

Rule VI.

1. The General Committee shall be at liberty to make such By-laws, from time to time, for the internal management of the Club, as they may deem requisite.

Powers of the General Committee.

2. All points not provided for in the Rules, shall rest with the decision of the Committee, whose duty it is, not only to enforce the Rules, but to take whatever measures, not inconsistent therewith, that they may deem necessary, for preserving the harmony, and upholding the character of the Institution.

Points not provided for in the Rules how to be decided.

3. No decision, of the General Committee, shall be subject to revision by an Extraordinary general meeting of subscribers, unless it can be shewn to have been passed in violation of the Rules of the Club.

Decision of Committee if in accordance with the Rules not subject to revision.

4. Any meeting called to take into consideration the proceedings of the Committee, must point out the Rule they have infringed to render such call valid.

Meeting to take into consideration proceedings of the Committee.

5. The By-Laws of the General Committee, until either varied, modified or annulled by themselves, or a majority of the subscribers at

By-Laws of Committee to have the force of Rules.

their Annual Meeting, are to have the force of Rules of the Club, and infractions of both will be dealt with in like manner.

RULE VII.

Ordinary Meetings of General Committee.

1. The Ordinary Meetings of Committee, shall be held on some one day in each week.

Special Meetings of Committee.

2. Special meetings of Committee, may be called for on all emergencies.

Quorum.

3. Any three members of Committee shall form a Quorum.

4. The decision of a majority of a Quorum shall be binding.

Majority required for the expulsion of a Member.

5. A majority, consisting of at least five members of the Committee, is requisite for the expulsion of any member of the Club. The votes to be given by ballot, if so required by any member of the Committee. The name of the member expelled together with the reasons that led to this step to be placed in the Reading room for general information.

House Member, duties of.

6. The House Member, is supposed to represent, more especially, the feelings and wishes of gentlemen residing within the Club, and to bring these to the notice of the General Committee. His duties will not otherwise differ from those of any other member of Committee.

Control of Servants.

7. The control of the Servants is vested in the Secretary under the general supervision of the Committee.

RULE VIII.

Majority required for establishing a new Rule or altering an old one.

1. No existing Rule shall be varied, annulled or modified, or new Rule established, except by a majority of three-fourths of the members present, at a General Meeting of subscribers.

Annual General Meeting.

2. A General Meeting of subscribers shall be held annually in the month of March, for the purpose of receiving from the Committee, a Report and Abstract of the accounts and concerns of the Club, for the preceding year, together with an estimate of the receipts and

disbursements for the current year. A List shewing the names of such subscribers who may be indebted to the Club on account of House bills, subscriptions or donations is to be laid before this meeting in order that the sense of the meeting may be taken as to what portion shall be written off to Profit and Loss and what retained as recoverable.

3. At this meeting, any subject, relating to the Club, may be discussed, but every resolution to be effective, shall be confirmed by a majority of votes, at a second General Meeting, to be held fourteen days subsequent to the first, and, during that time, the proposed resolutions shall be hung up in the Reading room, for the information of subscribers who may not have attended at the annual Meeting, and may wish to vote at the subsequent one.

Any subject regarding the Club may be discussed at Annual General Meeting.

Resolutions to be confirmed by a Second General Meeting.

RULE IX.

1. Extraordinary General Meetings of subscribers, shall be convened by the Secretary at the written requisition of any nine Members of the Club giving seven days notice ; The requisition must state, the subject to be laid before such General Meeting, and must be hung up in the Club House, signed by the appellant members, for the above mentioned seven days, and no subject shall be discussed, save that specified in the written requisition.

Extraordinary General Meetings to be convened by the Secretary.

Nine signatures requisite for its call.

RULE X.

1. In the event of a Member infringing a Rule or By-Law of the Club, it shall be the duty of the Secretary to bring the same to his notice, and to lay it, together with any explanation he may offer, before the Committee.

Infraction of Rules how to be dealt with.

RULE XI.

1. The Club House, shall be open daily for the reception of members at 6 in the morning, and closed at 12 o'Clock at night, after which hour, the lights in the public rooms shall

Hours for opening and closing the Club.

be extinguished, and no refreshments shall be furnished, or any game commenced.

2. Travellers, arriving at night, may be furnished with a light, to be shewn to their rooms.

RULE XII.

Accommodation.

1. Accommodation shall be provided in the Club House, for members requiring it, on the following terms, viz.

Charges for rooms, supplies, &c.

The charges for rooms, meals and supplies, shall be suspended in the Reading room, or other public rooms, for the information of members, and be subject to such modifications as the Committee may, from time to time, deem necessary.

Period allowed for occupation of rooms.

2. Each member can occupy his room for any period, not exceeding four months, without being liable to vacate, and is allowed a week's warning, to procure accommodation elsewhere, when his room is required for another applicant.

Absence required to allow of occupation on a fresh term.

A fortnight's absence, at a time, from the Club House, will entitle a member to occupy a room for a fresh period of four months, as if he had come up from the Low Country.

Accommodation how to secure.

3. Accommodation can be secured, by a member applying to the Secretary, a fortnight previous to arrival, and will be kept for a fortnight after the proposed day of arrival, or one month after the date of application, but no longer; rent being charged from the date of the room being secured for him. It is to be understood, that no particular room can be secured by an absent member, if application has been made for it by a resident member. One day's interval must be allowed between successive occupation, to admit of the rooms being thoroughly cleaned.

Occupants to be responsible for furniture, &c.

4. The departing member will be held responsible for any deficiencies of Furniture, breakages, &c. that he may not have brought to notice on first taking possession.

UTTARPARA PUBLIC LIBRARY.

A list will be appended in each apartment, for the information of its occupier, and no room can be taken without previous permission.

5. A member, residing in the Club, is required to give three days' warning, before leaving his room, in default of which, he will have to pay for three additional days.

Notice required before vacating.

6. No palankeens, boxes, or other articles, shall be kept in the verandahs, or passages, but be removed to the place allotted by the Secretary.

Palankeens, boxes, &c. not to be kept in verandahs and passages.

7. No horses, ponies, or cattle, shall be permitted to graze in the Club compound, and no dogs shall be permitted to come inside the Club House doors.

No cattle to graze in compound.

8. No tailor or other tradesman, working for members, to be allowed to occupy the verandahs.

9. No tent shall be pitched within the Club compound.

10. A single night's lodging shall be charged at one rupee, and application for it should be made to the butler, or duffadar of peons, before 10 P. M. on the same night.

Night's accommodation.

RULE XIII.

1. All bills for subscription, messing, supplies, &c. are made up to the end of the preceding month, and must be paid before the end of the current month.

Payment of bills.

2. In default of which, further issue of supplies, &c. will be stopped until such time as the amount is liquidated.

Penalty for non-payment.

3. Failing payment by the end of the succeeding month, the names of such members will be posted in the reading room, and should they not have paid by the end of the third month, their names will be erased from the list of subscribers. The Committee shall take measures to enforce payment, and the name or names of such defaulters, shall continue affixed in the reading room until the amount due be paid.

Committee will take measures to enforce payment.

Members to pay their bills before leaving the hills.

4. In the case of members, leaving the hills, their bills must be adjusted before their departure. From this rule no deviation will be allowed.

Notice required before leaving the hills.

5. It shall be necessary for members leaving the hills, to give three days' notice, in order that their bills may be prepared.

No private supplies to be consumed in the Club House.

6. No wine, or other supplies, to be brought into the Club House for consumption by a member. Any member, requiring such stores as may not be in the Club, is requested to be good enough to make known his wishes to the Secretary, when attention will be paid to them.

Charge for dining, &c. in private rooms.

7. A charge of two rupees will be made to any member dining in his own room, other meals to be charged an additional 25 per cent. on the ordinary charges.

RULE XIV.

Bills to be presented for payment, once only.

1. Bills of subscribers shall be presented for payment once only, if it should be inconvenient for the member to settle the amount, when so presented, or if there should be any error requiring correction, it shall be necessary for the member to rectify the same with the Secretary, and settle his bill, either by personal attendance at the Club House, or by sending a person for that purpose, before the end of the month; and in the event of members losing their bills, the accountant shall not be required to furnish them a second time, but reference can be made to the books of the Club.

RULE XV.

Strangers not admitted into the Club House except to visit a friend.

1. No member shall be allowed to introduce a stranger into the Club rooms, or Billiard room, except to view the buildings, or visit a friend in his own apartment, and none, except a member or honorary member, can be permitted to avail himself of any of the advantages of the establishment.

2. But this shall not be considered to preclude members from offering a slight refreshment to a friend, so introduced, such refreshment must be understood not to exceed a glass of wine, biscuit, or soda water.

RULE XVI.

Gambling not allowed in the Club House.

1. No gambling shall be allowed in the Club House, or in any of the buildings or apartments connected therewith.

RULE XVII.

1. No play of any kind shall be allowed on Sundays.

RULE XVIII.

Servants to be protected from ill usage.

1. No member is, on any account, to reprimand or ill use any of the Club servants, and it is the bounden duty of the Secretary, in order to secure respectable servants, to protect them from ill usage of every kind.

Verbal complaints not to be received.

2. No verbal complaints are to be received by the Secretary. Gentlemen having occasion to find fault, can bring the same to his notice in writing, for which purpose a book is kept, and which will be produced when called for.

RULE XIX.

Removals of books, &c.

1. Books, periodicals and pamphlets are, on no account, to be removed from the reading room, until after the first fortnight of their receipt. English newspapers, not before seven days, and Indian newspapers, not before three days.

2. On notice being received of the despatch of new works from London, their names will be registered in a book to be kept for the purpose on the Library table, and members, wishing to read the same, will enter their names under each work respectively.

On the receipt of the works, they will be sent by the Librarian to members, in succession, as their names stand on the list.

3. No work whatever, is to be taken from the library or reading room, without being first registered by the librarian, in a book, kept for the purpose, on the library table.

4. All works, when read, to be returned to the librarian.

Time allowed for reading a work.

5. No member to take away more than three sets of books, at one time, and they are to be returned within a fortnight.

Loss of works.

6. Subscribers, losing any work or part of a work, shall be charged the prime cost of the set.

Lending works.

7. Lending works to Non-Subscribers, is hereby declared to be a direct fraud on the Club Funds, and renders the offender liable to expulsion.

ALFRED GRIFFIN,
Secretary, O. Club.

Ootacamund, Club House, 5th April, 1856.

APPENDIX, No. IV.

PROSPECTUS OF SEMINARIES.

MISS HALE, LONGWOOD HOUSE, OOTACAMUND,

Receives Young Ladies, on the following

TERMS.

Board, with Instruction in the usual Branches of an English Education,	40	Rupees	per month.
Two Pupils from the same Family,	70	„	„
Three ditto ditto,	100	„	„
Weekly Boarders,	30	„	„
Daily Boarders,	24	„	„
Daily Pupils,	12	„	„
Two daily Pupils, under ten years of age, from the same family,	20	„	„
Instruction on the Piano,	14	„	„
Children under ten years of age,	10	„	„
Singing,	14	„	„
French,	3	„	„
Drawing,	10	„	„
Dancing,	10	„	„
Scripture Exercises,	10	„	„
German and Italian,	10	each.	

A reduction is made in favor of children entering the establishment, as boarders, under the age of ten years.

There is also a reduction in the terms for accomplishments to elder pupils, when they take lessons in more than one.

Medical Attendance, Stationery, Washing, and Tailor will be extra. Each pupil to be provided with small Camp Cot and Bedding, Knife,

Silver Fork and Spoon, &c. Reference is kindly permitted to the following gentlemen.

THE LORD BISHOP OF MADRAS.
D. ELIOTT, ESQ.
W. E. UNDERWOOD, ESQ.
GENERAL J. W. CLEVELAND, *Comg. S. Div.*
GENERAL BRUCE.
LIEUT.-COLONEL LITCHFIELD, 2*nd L. C.*
LIEUT.-COLONEL HANDS, 2*nd E. L. I.*
DR. GEDDES, *Surgeon.*
REV. W. T. BLENKINSOP, A. M.
REV. J. C. STREET.
REV. A. FENNEL, A. B.
LIEUT.-COL. W. P. MACDONALD, *Presy. Pay Master.*
COLONEL WRIGHT, 10*th Madras N. I.*
COLONEL BOULDERSON, 35*th Madras N. I.*
MAJOR PRITCHARD, 8*th Madras N. I.*
DR. WHITE.

The following is an extract from a letter received from the Lord Bishop of Madras.

You have my full permission, to use my name, in whatever way you think it most desirable, in behalf of your Establishment, and I beg to assure you, that I never gave the use of my name with greater satisfaction, on any occasion. Both from what I have seen and heard, of the improvement of your young charge, I cannot but feel thankful that the Providence of God has placed you in the position you occupy, on these beautiful Hills, and as far as I can assist, to make your, and your Nieces' efforts appreciated through the Presidency, my endeavours shall not be wanting.

I can most conscientiously say, that I know of few Boarding Schools in England, of a similar character, where young people have greater advantages, both religious and educational, than they possess in your Establishment.

Bishop's Downs, September 22nd, 1852.

Terms paid in advance, either monthly or quarterly.

A month's notice is required, previously to the removal of a pupil or a month's payment.

TRIVANDRUM PUBLIC LIBRARY.

ESTABLISHMENT FOR YOUNG LADIES, OOTACAMUND.

CONDUCTED BY MISS REGEL.

TERMS.

Board and tuition, including Washing, . .	Rs.	36	per mensem
Two pupils from one family, ...		62	"
Daily boarders, ...		18	"
Daily pupils above 8 years of age, ...		12	"
Daily pupils under 8 years of age, ...		10	"
Tuition in music, ...		12	"
Ditto in French, ...		10	"
Ditto in Drawing, ...		10	"

Books, Stationery, repairing clothes, and medical attendance, will be extras. A month's notice, or a month's payment required, previous to the removal of a child. Each boarder is to be provided with a fork and spoon; also a cot and mattrass.

Payments to be made monthly in advance.

Reference is kindly permitted to Mrs. DEALTRY.

Mrs. BYNG, *Ootacamund.*
Mrs. L. F. JOHNSON, *Ootacamund.*
W. M. MOLLE, Esq. M. C. S. *Honore.*

PROSPECTUS

OF

FARINGTON HOUSE SCHOOL,

OOTACAMUND, NEILGHERRIES,

CONDUCTED BY

MR. FREDERIC NASH.

With the assistance of two resident Masters.

REFEREES.

W. U. ARBUTHNOT, Esq., *Madras.*
W. H. BAYLEY, Esq., *Madras C. S.*
Rev. B. S. CLARKE, *Bangalore.*
H. F. C. CLEGHORN, Esq., M. D., *Madras.*
Major General CLEVELAND, *Trichinopoly.*
Rev. G. H. EVANS, M. A., *Ootacamund.*
Colonel H. S. FOORD, *Madras Artillery.*
Major J. MACDOUGALL, *Madras.*
H. NELSON, Esq. *Madras.*
J. SHAW, Esq., F. R. C. S., *Madras.*
Rev. A. R. SYMONDS, M. A., *Madras.*
JAMES TAYLOR, Esq., *Bombay.*
W. E. UNDERWOOD, Esq., *Madras C. S.*
Major General WATSON, *Ootacamund.*
W. S. WRIGHT, Esq., B. A., *Madras.*

THE COURSE OF INSTRUCTION, pursued at this Establishment, embraces, Scripture History, and the Evidences of Christianity; the Nature and Uses of Common Things; English Grammar and Composition; an Introduction to English Literature; the French, German and Latin Languages; Arithmetic, Algebra, and Geometry; Geography; the Outlines of Ancient and Modern History; the Outlines of Natural History; the Elements of Chemistry, and Natural Philosophy; and Vocal Music.

In reference to his METHOD OF EDUCATION, Mr. Nash begs to observe, that, in the course of his experience, he has had full opportunity both in England and in India of testing the *principles* on which Education should be based and conducted, and of becoming acquainted with the leading Modern Systems.

TERMS.

For Education only,	Rs.	14	per mensem.
„ Education with daily board,		22½	„
„ Education with board and residence,		40	„

Boarders under 9 years of age, are received at Rs. 35 per mensem.

Payments for Board and Education must be made *in advance*. Pupils may be supplied with the requisite Books, &c., at cost price. One month's notice is required prior to the removal of a Pupil.

The Domestic Arrangements receive the careful Superintendence of Mrs. Nash, aided by a competent Housekeeper, and are such as to ensure the comfort of Boarders.

Each Boarder is required to bring for his own use, a Dessert Spoon and Fork, one dozen Towels, and a Cot and Bedding. The option, however, is given, of paying an Entrance-Fee of Twenty Rupees, to entitle a Boarder to the use of a Cot and Bedding during the whole period of his stay.

Boarders are allowed to remain at School during either the Christmas or Midsummer Vacation, on payment of a Vacation-Fee (extra) of Fifteen Rupees. No reduction is made on account of Vacations or occasional absence.

EDUCATION ON THE NEILGHERRY HILLS.

MR. J. A. KING and his sister, MISS KING, residing at *Ootacamund*, will be happy to undertake the care and education of a few young children, on the following terms.

Boarders	each	Rs.	40	per mensem.
Two children of the same family		„	72	„
Three do. do. . .		„	100	„
Day-Pupils	each	„	12	„
Do. two of a family . . .		„	21	„
Do. three do. . . .		„	28	„

Day-pupils will be accommodated with breakfast and dinner at an additional charge of Rs. 7, 12 or 15 *per mensem*, according to the number of the family.

N. B.—Payments required in advance.

Mr. King was fourteen years Second Master of the Vepery Grammar School, at Madras; and both his sister and he have had great experience in the care and tuition of children. The pupils entrusted to their charge will be instructed in the various branches of English Education, Latin, Mathematics, and the Elements of Natural Science: and their comforts and religious training will be carefully attended to.—*Rajmahal, Ootacamund, May*, 1856.

A. M. D. G.

LORETTO CONVENT.

OOTACAMUND, NEILGHERRIES.

PROSPECTUS.

1. The Convent School, established at Ootacamund under the care of the Loretto Sisters, affords to parents residing in India, an opportunity of obtaining for their children a liberal and distinguished education, such as they would get in the mother-country.

2. Ootacamund has been selected, on account of its very healthy and salubrious climate, which has earned for the place a world-wide and well deserved renown, as the best sanatarium in India. The invigorating effects of the climate render Ootacamund a place especially favorable for children, whose constitution is generally more or less impaired by residence in almost every other place in India.

The excellent situation of the Convent, near the Catholic Chapel, is well known: it has a beautiful garden and very spacious ground attached to it; commands the view of the lake; and is in fact, one of the best sites in Ootacamund.

The utmost attention is paid by the religious Sisters to the proficiency, health and comfort of the Pupils.

3. The moral conduct of the Young Ladies is watched over with the strictest attention, and while every effort is made to expand and adorn the mind, the heart is trained to virtue.

The character of the Pupils is carefully studied: they are taught by reasoning to correct their errors, and are gradually formed to habits of regularity and order.

The Loretto Sisters promise *not to interfere in any way with the different religions of their Pupils.*

4. The course of Education comprises, Reading, Writing, Arithmetic, Grammar, Geography, History, the use of the Globes, *French*, etc. etc.... with every branch of useful and ornamental Needle Work.

The terms are as follows:

For Boarders, ...	Rs. 30	per month.

EXTRA-CHARGES.

Piano-Forte (the charge for the use, repair and tuning of the instrument included), ...	Rs. 12	per month.
Drawing, ...	5	„
For the use of Books, Stationery, etc.	2	„
Washing, ...	1	„
Medical attendance, and Medicines, ...	3	„
Entrance Money, for the use of furniture, including table and bed linen, ...	25	„

DAY-BOARDERS.

Per month, ...	Rs. 20	„
Extra-Charges, the same as for boarders, (medical attendance, and washing, excepted.)		

DAY-PUPILS.

The course of education is the same as for Boarders, ...	Rs. 12	per month.

N. B. 1. Young Ladies beyond fourteen years of age are not admitted.

2. It is contrary to the Rules of the Establishment to receive visitors on Sundays.

3. Parents or Guardians may visit the Children on Wednesdays from 11 to 2 o'clock P. M. But they are not expected to visit them oftener than once in the month.

4. During the Christmas and other vacations, the Pupils are permitted to leave the Convent, and remain with their Parents or Guardians *only*. It is, however, strongly recommended that the Children should not be removed at any season in the year.

5. All payments to be made quarterly in advance, no allowance being made for absence, when a month is once entered upon.

6. The uniform to be worn by the Children (if provided by the Institute) will be an Extra-charge.

7. Previously to the removal of a Child from School, a month's notice, or the payment of a month's pension, is required.

8. No reduction is made on account of absence from School, during the fixed vacations, and no extra-charge is made for the support of such boarders as may remain at the Convent during vacations.

9. The annual vacation commences on the 21st day of December, and terminates on the 2d day of February.

10. It is particularly requested that Parents or Guardians will deposit with the Lady Superioress the pocket money, which they may allow for the use of their Children, or Wards. This precaution is necessary, in order to prevent the injudicious, or injurious outlay of such money by the Pupils.

11. Parents and Guardians are requested to appoint an Agent to procure for their Children, or Wards whatever clothes, etc. etc. they may require, after admittance into the Establishment.

There is a second school, adjoining the Convent, established in order to afford to parents, of limited means, an opportunity to give a useful education to their daughters. The course of Instruction comprises, Reading, Writing, Geography, etc. etc. and every Branch of useful Needle-Work.

Terms for Boarders, ...	Rs.	12	per month.
Entrance Money, ...		10	,,
Use of Books, Stationery, etc.		1	,,
For day-Pupils, ...		6	,,
Medical attendance, Washing, etc.		3	,,

References for further information to be made to the Lady Superioress of Loretto Convent, Ootacamund.

N. B. Besides the two Schools already mentioned in the Prospectus, the Loretto Sisters will have a third separate School, in which European and East Indian Orphans will be received, clothed, educated and treated with maternal care. A Free day School for poor Children will be attached to the Orphanage. Donations and Subscriptions, for the above named benevolent purposes, will be most gratefully received, and acknowledged, by the Lady Superioress of Loretto Convent, Ootacamund.

Appendix, No. V.

Memorandum of the Current Prices of the under-mentioned Provisions at Ootacamund, for the month of August, 1856.

		Prices.		
		R.	A.	P.
1st Sort Beef, ...	per lb.*	0	4	0
1st ditto Corn Beef, ...	„	0	4	6
Veal, ...	„	0	4	0
1st sort Ham, ...	„	0	12	0
1st sort Bacon, ...	„	0	6	0
1st sort Sheep, ...	..	5	0	0
2nd ditto ditto, ...	..	3	0	0
3rd ditto ditto, ...	..	1	8	0
Saddle of Mutton, 1st sort, ...	..	3	8	0
Hind-quarter of ditto ditto, ...	..	2	0	0
Fore-quarter of ditto ditto, ...	..	2	0	0
Leg of ditto ditto, ...	..	1	0	0
Neck and Breast, ...	..	0	12	0
Bread, 1st sort, ...	10 Loaves	1	0	0
Brown ditto ditto, ...	12 „	1	0	0
Common Biscuits, per lb.	..	0	4	0
Wheat flour, 1st sort, per Seer, ...	..	0	4	0
Rolong, 1st sort, ...	..	0	4	0
Ditto, 2nd ditto, ...	..	0	3	0
40 Seers of Bran, ...	..	1	0	0
12 bottles of Milk, ...	..	1	0	0

* The weights in use in the Bazars of the 4 settlements, are;
The Maund of 25 lbs. avoirdupois.
The Viss of 2 lbs.—ditto.
The pound of 40 rupees (tolas weight.)
The seer of 25 ditto, (or ditto). —Ed.

		R.	A.	P.
Butter, ...	per lb.	1	0	0
Ghee, ...	2 seers,	1	0	0
Lamp Oil, 2½	ditto,	1	0	0
Sweet Gingely ditto, 2	ditto,	1	0	0
1 Ditto of Ghee, 1st sort, ...		0	4	0
1 Ditto of ditto, 2nd ditto, ...		0	3	0
Sugar, 1st sort, ...	per maund of 25 lb.	4	4	0
Ditto, 2nd ditto, ...	ditto,	4	0	0
Rice, 1st sort, ...	6 seers per	1	0	0
Ditto, 2nd ditto, 6½ ditto, ...		1	0	0
Ditto, 3rd ditto, 7½ ditto, ...		1	0	0
B. Gram, 8 seers, ...		1	0	0
Coolty, 9 to 20 seers, very variable, ...		1	0	0
Fowl, 1st sort, each, ...		0	6	0
Ditto, 2nd ditto, ...		0	4	0
Chickens, 8 to 10, ...		1	0	0
Eggs, 4 to 8, ...		0	1	0
Ducks, 1st sort, per pair, ...		1	8	0
Geese, 1st sort, each, ...		3	0	0
Turkey, 1st sort, ...		5	0	0
Ditto, 2nd ditto, ...		3	8	0
Kid, ...		1	0	0
Calf's Head and Feet, ...		2	0	0
Salt, 8 seers, ...		1	0	0

Rates of Hire of Coolies and Bearers on the Hills.

	From Ootacamund.	*Miles.*	*Per Cooly.* R.	A.	P.	*Per Bearer.* R.	A.	P.
Hire to	Aricode, ...	63	2	0	0	2	4	0
,,	Avalanche Bungalow, ..	15	0	6	0	0	8	6
,,	Bandipoor, ...	30	0	12	6	0	14	0
,,	Bilicul, ...	5	0	3	0	0	4	0
,,	Burliar, ...	17	0	7	6	0	10	6
,,	Cholikul, ...	45	1	2	0	1	11	0
,,	Coonoor, ...	10	0	4	0	0	5	6
,,	Dimhutty, ...	16	0	6	0	0	9	6
,,	Dodabetta, ...	3	0	2	0	0	2	6
,,	Goodaloor, ...	22	0	10	0	0	12	6
,,	Goondlepett, ...	40	1	0	6	1	2	0
,,	Hoolicull, ...	11	0	6	0	0	8	0
,,	Jackatalla, ...	7	0	3	0	0	5	6
,,	Kaitee, ...	3	0	2	0	0	2	6
,,	Kartairy, ...	7	0	4	0	0	5	6
,,	Kooroomund, ...	10	0	5	0	0	5	6
,,	Kotergherry, ...	15	0	6	0	0	8	6
,,	Kulhutty, ...	7	0	3	0	0	4	6
,,	Marlimund, ...	3	0	2	0	0	2	6
,,	Meetapollium, ...	24	0	10	0	0	14	0
,,	Mussnee Covil, ...	17	0	7	0	0	9	6
,,	Neddywuttum, ...	18	0	7	0	0	9	6
,,	Nunjanaud, ...	5	0	3	0	0	4	0
,,	Pykarrah, ...	10	0	4	0	0	5	6
,,	Raliah, ...	10	0	4	0	0	6	0
,,	Seegoor, ...	12	0	5	0	0	7	6
,,	Sisparah, ...	33	0	14	0	1	3	6
,,	Tippacardoo, ...	22	0	9	0	0	12	6
,,	Wallaghaut, ...	41	1	0	0	1	7	0
,,	From Coonoor to Meetapollium,	15	0	6	0	0	8	6
,,	From Do. to Kotergherry. ..	13	0	5	0	0	7	6
,,	From Kotergherry to Meetapollium, ..	11	0	6	0	0	10	9

APPENDIX. No. VI.

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*Manual of Instructions for the guidance of the Revenue Officers of the Coimbatore District, in their disposal of applications made to them for Lands upon the Neilgherry Hills, sanctioned by Government, 19th Dec. 1849, in con. 7th Jan. 1850, Rev. Dept. No. 1213.**

Vide Notes 5 *to* 9, *pages* 271 *and* 272.

I. The following Manual of Instructions is communicated to the revenue authorities of the Coimbatore District, for their guidance in the disposal of the applications which may be preferred to them for lands upon the Neilgherry Hills, required either for building, or for agricultural purposes.

II. For the more complete elucidation of the whole subject; the Board would refer to the documents noted in the margin,* copies of which have been supplied to the office of the Principal Collector of Coimbatore. From these papers, the following instructions have been mainly compiled; and in them, the sentiments of the Honorable Court on the rights of the Todas, and other Settlers on the Hills, and on the principles which should regulate the grants of land for agricultural purposes in those parts of India which, from their climate, are most likely to be frequented by the European Colonist, are clearly and distinctly stated.

* Revenue Despatch to the Governor General of India, No. 2, dated 23d Feb. 1842.
Revenue Despatch to the Government of Fort St. George, No. 13, dated 21st June, 1843.
Extract Min. Con. dated 12th Sept. in con. 5th Oct. 1843, Rev. Dept. No. 999.

III. The Survey of the Neilgherries (proper) has been completed, and copies of the Map of the Hills are under preparation, one of which, on completion, will be furnished for record in the Principal Collector's Cutcherry. In this Map will be separately exhibited

1. The lands in the occupation of Government.

* *This Manual was approved by the Hon'ble Court, in para.* 2 *of their Despatch dated* 17*th July*, 1850, *No.* 3, *communicated by Government*, 8*th Oct. in con.* 4*th Nov.* 1850, *Rev. Dept. No.* 918.

2. Those held by private individuals.
3. Those brought under cultivation by the Burghers.
4. Those in the occupation of the Todas.
5. Those entirely* unoccupied, over a portion of which the Todas have been accustomed to pasture their herds.

IV. Lands usually under tillage by the Burghers, are, it is understood for the most part, roughly classified, and the public demand determined. Lands which have hitherto been either altogether unoccupied, or have been used only as pasture grounds by the Todas, will, on being taken up for cultivation, have to be assessed according to the rates paid on land of similar quality in the nearest agricultural village, unless when the land be within a specified distance from Ootacamund; in which case a different mode of assessment has been laid down in the orders of Government of 25th July, 1836, and 7th January, 1837. These rates, it is, however, to be observed, are chargeable only on land taken by parties, other than Burghers, for *agricultural* purposes; land for buildings, compounds, &c. will still be assessed at Rs. 5-4-0 for one Cawney in each lot, the rest being subject to the assessment of Rs. 1-2-4 per Cawney, as published in the Fort St. George Gazette of 1st Feb. 1837.*

Order of Govt. 25th in con. 28th July, 1836, Rev. Dept. No. 940, *See Note 7, page* 271.
Do. 7th in con. 9th Jan. 1837, Rev. Dept. No. 14, *Note* 8, *page* 272.
From Collr. Malabar 21st Dec. 1841 in con. 13th Jan. 1842.

Board to Principal Collector of Malabar, 23d Jan. 1837, No. 116.

Note, viz. for the 1st Class double the amount paid for the same class in the Burgher villages—or 7 Rs. per Bullah, or Rupees 2-5-4 per Cawney—for the 2d class, ¾ more, for the 3d, ½ more, and for the 4th, ¼ more.

Court's Despatch 21st June, 1843, para. 19.

* *Page* 60.

V. The following Rules are to be understood as applying to all land taken up in any part of the Hills by Europeans, or others, for agricultural speculations, or for building purposes. The Native inhabitants of the Neilgherries will, however, continue as heretofore to hold, on Puttah, the lands now in their enjoyment, or any further lands which they may take up for their own cultivation. Native Settlers from the low country will also be allowed to hold, on similar tenure, such lands as they may take up *boná fide* for their own occupancy. The Collector will also be at liberty to allot to East Indians, Natives of the agricultural classes, Europeans of the lower orders, Pensioners, and others, for houses and gardens, assignments of land not exceeding half a Caw-

ney in each instance, to be held on Puttah, and at the ordinary rate of land assessment, such rate being subject to alteration hereafter, on a general revision of the assessment of lands on the Neilgherries. The necessary stipulations respecting the maintenance of boundaries, right of way, appropriation of water, &c., will be inserted in the Puttah. If in any other instances of a similar kind, it may seem desirable to give land on Puttah, rather than on Lease, or Grant, the Collector shall communicate with the Board upon the subject, and act according to their orders. With such exceptions as the foregoing, all applications for lands upon the Neilgherries shall be disposed of in the manner specified in the following Rules.

VI. On application being made for land upon the Neilgherries, whether for building or for agricultural purposes, it will first be necessary to ascertain, whether it be advisable to grant the land on lease at all; or whether, from its proximity to the Munds of the Todas, or other spots appropriated by them to religious rites; from its containing forest land, or valuable timber; or from other causes, its occupation by private individuals be open to objection. The attention of the Revenue Authorities of Coimbatore is here particularly drawn to para. 11 of the Honorable Court's Despatch of 21st June, 1843, which it will be remarked not only guards from all interference the Munds, sites of villages, and spots held in peculiar veneration by the Todas, but interdicts the grant of lands in the vicinity of their places of residence, in the hope that these may hereafter be cultivated by the Todas themselves, when they shall be induced to engage in agricultural pursuits. It will also be necessary carefully to bear in mind the observations of Government in para. 11, Extract Minutes Consultation, 13th May, 1848, respecting the necessity of providing for the preservation of the woods on the Hills, not only on account of the timber, but for the maintenance of the streams and springs which are supplied or protected by them.

In con. 10th Aug. 1848, Rev. Dept. No. 506.

VII. If, on careful inquiry being made upon the above points, the result should be satisfactory, a full report is to be made to the Board of Revenue upon the subject, embracing all particulars, and accompanied by an extract from the Survey of the Neilgherries, so as to exhibit the extent and situation of the land applied for, and of that in its immediate vicinity. On their approval being signified, the Collector will, after due notice, proceed to put up the land to public auction, at an upset price, in the manner which may appear to him most convenient, and

best adapted for ensuring fair and equal competition. The upset price must vary with circumstances, but should usually be from 8 to 10 years' assessment of the land to be sold. The amount which he would propose for such price should always be stated in his preliminary report to the Board; and it is to be understood as being altogether distinct from, and in addition to, the actual land assessment which will be collected yearly according to the terms of the Lease. The land will then be knocked down to the highest bidder, or to the original applicant, at the upset price, if there be no advance upon it, but under the following conditions and limitations.

H. C. letter to Supreme Govt. para. 61.

VIII. It is to be clearly understood that the fee-simple property in the land applied for is, in no case, to be disposed of. The land will be granted on lease only, and at the expiration of the term for which it has been leased, it will be liable to re-assessment, or to the imposition of such revised assessment as may intermediately have been introduced. Leases for lands taken up for agricultural objects will be granted for periods not exceeding thirty years; those for building purposes for 99 years, renewable every 33 years, at the option of the lessee, and without payment of fine, or enhancement of assessment.

See the above Despatch particularly para. 69.

IX. Land will not be granted for agricultural purposes to any person who may be unable to satisfy the Collector, if required, that he possesses the means for bringing it under cultivation. The Collector is authorized to reject, or set aside, all offers from individuals who may decline, or may be unable to satisfy him on these points, although their biddings may be the highest, subject of course to an appeal to the Board of Revenue, and Government, within a reasonable period.

X. If it shall appear to the satisfaction of the Revenue Authorities, upon inquiry made previous to the issue of a Lease, or at any time during its currency, that the land leased is liable to the payment of Goodoo, or compensation fees to the Todas, the Goodoo payable to these latter will be collected from the Grantee, in addition to the Assessment, for the purpose of being paid to the Todas from the public Treasury. The amount of Goodoo in each case shall be determined by the Collector, subject to an appeal to the Board of Revenue.

Board to Govt. 10th Nov. 1842, No. 493, (2094.)
E. M. C. 12th Sept. in Con.

XI. Every lease of land for cultivation shall contain stipulations that the Lessee shall bring into cultivation cer-

5th Oct. 1843, Rev. Dept. No. 999, para. 7.

Letter to Supreme Government para. 59.

tain specified proportions of the land granted him within certain given times, in failure of which the Lease shall be liable to be declared null and void, such portion of the land as may have been left uncultivated will be forfeited at the discretion of the Board of Revenue, and the Lessee in each case, will be liable to such penalties as shall be determined in the Lease.

Letter to Supreme Government para. 62.

XII. No Lessee shall be at liberty to transfer, or otherwise alienate, any part of the land leased to him, which he shall not have brought under cultivation.

Ibid para. 54.

XIII. The Lessee shall be bound to erect boundary marks around the land leased to him, and shall maintain them in good condition at his own charge.

Para. 54.

XIV. He shall also respect all roads, foot paths, and rights of way. It is indeed desirable that such roads, &c. should be, as far as possible, ascertained, and specially excepted from the Lease. He shall further engage to allow right of way through his land, though none previously existed, in the event of land adjoining to, or beyond, his own, being taken up for cultivation by others, so as to make their land accessible. In the event of any public read being required to be carried through his limits, or of such right of way being needed for any public purposes, the Lessee shall, however, be entitled to compensation for the land which he may give up for this purpose, which compensation shall be determined in the mode prescribed in Rule XVII.

Letter to Supreme Government, para. 54-63.

XV. It is to be clearly understood that Government reserve to themselves, in the fullest manner, the complete control over all Streams, Springs, Reservoirs and Channels of irrigation. No Stream is to be diverted, nor its water taken, for purposes of irrigation, without the special cognizance and sanction of the Revenue Authorities of the District. Springs, Streams, Rivulets, &c. should, whenever practicable, be specially exempted from the Lease.

Ibid para. 54.

XVI. Government reserve to themselves all mineral products of the land granted on lease, with liberty to work mines wherever desirable, and free right of way to such mines, on due compensation being made for the extent of land thus appropriated.

XVII. Government further retain the power of taking, on fair and equitable compensation, any land included within the limits of a Lease, which may be required for the construction of a Road, Channel, or other work of general utility and convenience, or for the exigencies of the Public Service. The compensation referred to in this and the preceding Rule shall be determined by arbitration, one Assessor being named on the part of the Lessee, and of Government, respectively, which two are jointly to choose a third. The award of the majority shall be taken, except in cases wherein gross partiality or incompetency on the part of the Arbitrators shall be proved to the satisfaction of Government, in which case the award shall be set aside, and three fresh Assessors nominated in the manner above stated, whose decision, whatever it may be, shall be final.

XVIII. In all questions which may arise regarding the sense in which the provisions of his Lease are to be construed; in all boundary, or irrigation disputes, or differences with the Natives; the Lessee shall be bound to abide by the decision of the local Revenue Authorities, subject however to an Appeal to the Board of Revenue and Government.

XIX. Stipulations to the effect contained in the preceding Rules will be introduced into the form of Lease which is now under preparation by the Law Officers of Government,* and which, when completed, will be furnished for the guidance of the Revenue Officers, and which the Board direct may in all cases be adopted.

* *Revised forms of Leases were furnished by Govt. 14th Oct. in con.* 11*th Nov.* 1850, *Rev. Dept. No.* 956.

XX. It will, however, be understood that although land for which application may be made upon the Neilgherries, will, as a general rule, be disposed of by public auction, in the mode and on the conditions specified in the preceding Rules, the Government nevertheless reserve to themselves the right of granting land without prior competition or exposure at an upset price, and on such terms as they may see fit in all cases wherein, with a view to promote agricultural undertakings, or improvements, or for any other purposes, it may seem to them desirable to do so.

XXI. It will be seen from the Honorable Court's Despatch of 21st June, 1843, that the rights of the Todas over the Neilgherry table-land are, in the judgment of the Home Government, simply those of pasturing their herds over the hitherto unreclaimed portion of it. They can, as the Court have remarked, dispose of such rights only as they themselves possess. No party, therefore, purchasing land from the

Todas, can be held to have bought any other right than that of pasturage. If the land be required for cultivation, it must still be disposed of, under the Rules in force, by public auction, for that purpose; the Goodoo on the land, when such may clearly appear to be payable, being, in that case, paid to the party who has purchased the right of grazing from the Todas, in place of to the Toda himself. The right of the Burghers would seem to be simply that of occupation. No purchase therefore, concluded with a Burgher, can confer a title to any land, unless, (as in the low country,) the land sold be sheyeal land, *i. e.* land immediately in the occupation of, and under cultivation by the latter, and that, subject to the limitations and conditions of each description of land.

XXII. Copy of this Manual, and of the papers referred to in it, are to be furnished to the Commanding Officer of the Hills, for his information, and for public convenience and reference.

APPENDIX, No. VII.

MEMORANDUM

By Col. Cameron, C. B. Commandant in the Neilgherries, dated August, 1856.

1.—In addition to the numerous, and conflicting Offices, assigned to the Commandant and assistant Magistrate of the Neilgherries, the public, particularly the European portion of it, insist upon his fulfilling, in addition to these, self-assumed offices, similar to the functions of Banker, Solicitor, Notary public, Arbitrator, and Land Surveyor, the discharge of which add, in no slight degree, to the harassing, and onerous nature of his official duties.

2.—From the defective state of the Law, a regularly organized system of swindling has long been carried on by natives, who, receiving advances for contracts, fly to the low country, or tauntingly tell their unfor-

tunate dupes to institute a Civil suit against them in the Sudder Ameen's Court. Europeans of the worst class, and particularly foreigners, have recently settled themselves upon the Hills, and have emulated the natives in carrying on this system.

3.—The warning given to the Government by the present Commandant, that the impunity given to the lesser crimes, would eventually lead to the commission of greater ones, has, within the last few weeks, been frightfully fulfilled; several scenes of the most revolting outrage, and murder, having occurred amongst the natives.

4.—One half, of the, so-called, servants upon the Neilgherries, are either liberated, or escaped convicts; and, in consequence of there being no law between master and servant, and the Legislative Council of India having refused to pass one, these malefactors earn a livelihood, by practising upon the fears of unprotected ladies and families. This has latterly risen to such a pitch, that several have quitted the Neilgherries, not deeming either their persons or property secure, under the system at present existing.

5.—Gang robberies, and dacoities are on the increase, amongst the natives, at a distance from the station, emboldened by the defective state of the law to suppress them; in fact, founded, as this is, on mere Musulman tradition, it may be safely asserted, that there is scarcely an act of the Magistrate, undertaken for the security of life and property, that does not render him liable to a prosecution, which, in fact, has been threatened, in regard to the present Commandant, for suppressing nuisances, which, in any country in Europe, would have rendered their perpetrators liable to the heaviest penalties.

6.—The only real, and effectual remedy for the evils, at present so universally prevalent upon the Neilgherries, and to make them what they very soon would be, a blessing to all visitors, as well as the permanent residents, is, to carry out the Marquis of Dalhousie's intention, had his Lordship remained in India, of making the whole of these Districts a non-Regulation Province.

Appendix, No. VIII.

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*A List of Plants gathered on the Neilgherries, particularly in the environs of Ootacamund. By the Rev. Mr. Schmid.**

Monandria Monogynia.

1.—Hedychium ? ? According to Persoon's "*Systema*," it ranks next to *Maranta.*

Diandria Monogynia.

2-5.—Jasminum 1, very similar to Jasminum *hirsutum*, (See Edwards' Botanical Register, vol. i. p. 18.)

2, very similar to the above, but leaves very soft, hairy.

3, leaves smooth, small shrub. B. R. vol. i. p. 19.

4, similar to Jasminum *revolutum*, Bot. Reg. vol. iii. p. 176, and to *humile*, Bot. Reg. vol. viii. p. 350.

6-8.—Phillyrea, 3 species; one very similar to Ph. paniculata.

9.—Circaea, most undoubtedly a new species. Never higher than 3 inches.

10, 11.—Paederota? *minima*, and another larger species.

12.—Gratiola.

13-15.—Utricularia *cærulea?*

2, *lutea*, and a third larger blue species.

16-25.—Justicia, 10 species at least.

26-28.—*Tidoo*, native name of a large forest-tree; 3 species; ranks in Persoon's system next to *Lithophila.*

Diandria Trigynia.

29-32.—Piper; and 3 species of Peperomia.

Triandria Monogynia.

33-35.—Valeriana; 3 if not 4 species.

36-41.—Commelina; 5-6 species, 2-3 of them most probably new; the others have not been examined.

42-43. Sonerilla, 2 species; different from those in Roxburgh's Flora.

44.—Xyris ? ? a new genus with a nectary; Xyris has none.

45.—A tree, *Kanashoo* in the language of the original mountaineers.

* A vast addition to this List has been made by later explorers of the rich field of Botanic productions of the hills; the Memoirs of which the Editor has failed to obtain in time to include them in this volume.—Ed.

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Tetrandria Monogynia.

46.—Dipsacus, undoubtedly new.

47, 48.—Galium, 2 species.

49-51.—Hedyotis *Leschenaultii*, and 2 other shrubby species.

52-55.—Hedyotis (or Asperula ?) 4 herbaceous species.

56.—A shrub, ranking next to Callicarpa.

57.—Plantago, perhaps 2 species.

58-60.—A new genus ranking next to Bartonia ; 2 or 3 species.

61.—*Erel*, the native name of a large forest-tree with beautiful red flowers.

62, 63.—Oldenlandia *biflora !* and another species.

64.—Elaeagnus, new species, similar to *orientalis.*

65, 66.—Blackburnia ? 2 species.

Pentandria Monogynia.

67.—Myosotis Lappula ?

68.—Lysimachia *Clementsoniana*, and another plant, which may perhaps be Lysimachia ? *atropurpurea.*

70.—Anagallis *arvensis*, has probably come hither with seeds from Europe.

71-73.—Convolvulus, 3 species.

74.—Ipomoea. Besides a great variety of Convolvulaceæ on the ghauts.

75-83.—Loranthus *Leschenaultii*, and 8 other species.

84.—Thesium *humile*, or *squarrosum.*

85-86.—Lonicera *Leschenaultii*, and another species.

87-88.—Verbascum *blattaria !* and another species.

89-90.—Datura *Stramonium ?* and another species, new.

91, 92.—Physalis *peruviana ?* and a procumbent dwarf species.

93-100.—Solanum *nigrum ! at least* 7 species more.

101, 102.—Coffea ? 2 species.

103-105.—Bacobotrays, 3 species.

106.—Tectona, down the ghaut.

107, 108.—Rhamnus, *more* than 2 species.

109, 110.—A shrub, called wild orange, ranking next to Toddalia ; 2 species.

111-113.—A new genus, the flower presents a remarkable middle link between Hedera and Vitis. At least 3 species ; trees.

114.—Euonymus ; large tree.

115.—Kóngee, native name of a tree.

116.—*Mountain Parijipatily*, native name of another tree.

117-119.—Viola, 3 species.

120-125.—Impatiens; 6 species; one approaching to Chinensis, another to Cornuta.

126-127.—Achyranthes *aspera* (towards the foot of the hills); and another species.

128-131.—Celosia or Illecebrum; 4 species at least.

132.—Carissa spinarum.

Pentandria Digynia.

133, 134.—Asclepias, 2 species.

135, 136.—Apocynum? 2 species.

137.—Ceropegia? with an eatable bulb; probably the type of new genus.

138, 139.—Chenopodium; two species at least; viz. *ambrosioides?* and *hybridum?* a third near the foot of the hills, viz. *maritimum?*

140, 141.—Gentiana, one species; quite an alpine plant, the other with one pistil.

142-145.—Sanicula? 2 of the species with not umbellate flowers.

146-148.—Bupleurum *falcatum! baldense!* an *fruticosum!*

149.—Caucalis *Anthriscus!* not indigenous.

150-153.—Four other Umbellatæ, at least.

Pentandria Trigynia.

156, 157.—Viburnum, one perhaps *laeve*, the other I would call *primuliflorum.*

Pentandria Tetragynia.

158.—Parnassia, new, with 3 pistils.

Pentandria Pentagynia.

159.—Linum.

160, 161.—Drosera, both species new; one very similar to Drosera *rotundifolia*, but without nerves.

Hexandria Monogynia.

162-166.—Tradescantia, 5 species.

167.—Lilium.

168.—Curculigo.

169, 170.—Asparagus; 2, if not 3 species.

171.—Ophiopogon *nilagiricus* (Nobis) ranks next to Convallaria *japonica.*

172.—Fritillaria.

173.—Ornithogalum?

174.—Allium, I saw only the onion of it.

175, 176.—Mahonia (Berberis); 2 new species.

177.—Bambusa; perhaps 2 new species.

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Hexandria Trigynia.

178.—Rumex *acetus*, probably not indigenous.

Octandria Monogynia.

179, 180.—Oenothera *biennis* (not indigenous), and another species at the foot of the hills.

181.—Dodonæa, a willow-leaved new species.

Octandria Trigynia.

182-187 —Polygonum, 6 species.

Octandria Tetragynia.

188.—Calanchoë.

Enneandria Monogynia.

189-191.—Laurus, three species wild, and a fourth cultivated at Dimhutty.

Decandria Monogynia.

192.—Sophora *glauca* (De Candolle).

193-197.—Cassia, 5 species, at least.

198.—Tribulus *lanuginosos*, towards the foot of the hills.

199-201.—Melastoma, 3 species, one of which comes nearest to Rhexia, and one would, according to Persoon, be a Meriania.

202.—Rhododendron arboreum?

203, 204.—Vaccinium, 2, perhaps 3, species.

205.—Arbutus.

Decandria Trigynia.

206.—Silene, similar to Armeria, probably not indigenous.

207.—Stellaria.

208.—Arenaria.

209, 210.—Oxalis *sensitiva?* and a new species similar to Oxalis *repens*.

211.—Cerastium *viscosum!*

212.—Spergula; perhaps not indigenous.

Dodecandria Monogynia.

213, 214.—Triumfetta Bartramia, and another species.

Dodecandria Trigynia.

215-217.—Euphorbia, 3 species.

Icosandria Monogynia.

218.—*Seepoo*, native name of a tree.

219.—*Kemmainoo* native name of another tree.

220.—Myrtus *tomentosa*, or rather Mespilus *monogynia*.

221-224.—Calyptranthus? four species.

Icosandria Digynia.

225.—Crataegus, very similar in appearance to Mespilus *Cotoneaster*.

226.—Sorbus, *Tampattan*, native name, and several other species of Sorbus or Crataegus.

Icosandria Polygynia.

227-228.—Rosa, two new species.

229-231.—Rubus, three new species.

232, 233.—Fragaria *indica* and *collina*.

234-236.—Potentilla, 3 species.

Polyandria Monogynia.

237.—Elaeocarpus.

Polyandria Polygynia.

238.—Magnolia, if not a new genus.

239.—Anemone.

240, 241.—Clematis, two species.

242.—Thalictrum.

243-245.—Ranunculus, 3 species.

Didynamia Gymnospermia.

246.—Ajuga?

247.—Teucrium.

248-250.—Satureja, 3 species.

251.—Mentha, one, perhaps two, species.

252-258.—Leucas, (Phlomis), seven species.

259.—Stachys, very similar to Stachys *arvensis* and *annua*.

260.—Thymus.

261.—One or two plants participating of the characters of Plectranthus and Barbula.

262.—A plant ranking next to Dentidia.

263-264.—Scutellaria, 2 species, new.

265.—Prunella, new species. Before examining it, I long took it for granted to be *grandiflora*.

Didynamia Angiospermia.

266.—Buchnera *Asiatica*, but probably a new species.

267-269.—Pedicularis, three new species.

270.—Gerardia *delphinifolia*.

271.—Orontium, very similar in appearance to Antirrhinum minus.

272, 273.—Ruellia, 2 or more species, one doubtless new.

274.—Barleria *strigosa*!

275, 276.—Two or more undefined plants of this class.

Tetradynamia Siliculosa.

277.—Thlaspi *Bursa-pastoris.*

Tetradynamia Siliquosa.

278-280.—Cardamine, two species.

281.—Arabis?

282.—Brassica *orientalis.*

283-286.—I have observed *at least* four other Siliquosæ more.

Monadelphia Tetrandria.

287.—A shrubby climber, with orange-coloured, 4-petalous flowers, the stamens of which cleave as much together as those of many Solanæ or of the Lobelia.

Monadelphia Pentandria.

288-290.—Lobelia, 3 species. One of them I suppose to be *triangulata,* a name which I found written with pencil in Persoon's Systema, which a friend had lent me; the second species is one of the largest and highest, and the third species, one of the smaller herbaceous plants on the hills.

Monadelphia Decandria.

291, 292.—Geranium, 2 species. One comes near to Columbium, the other has more the habitus of Pelargonium.

293-303.—Malva *rotundifolia,* (perhaps not indigenous,) and *at least* 10 Malvaceae more.

Diadelphia Hexandria.

304.—Fumaria officinalis, most probably not indigenous.

Diadelphia Octandria.

305.—Polygala.

306.—A shrub with a Polygala-flower; probably a new genus, unless we would call it Securidaca *spuria.*

Diadelphia Decandria.

307-311.—Crotalaria, 5 species at least.

312.—Cytisus, similar to Laburnum.

313.—Indigofera.

314-319.—Six other Leguminosae, *at least.*

Polydelphia Polyandria.

320-322.—Hypericum, 3 species; one similar to *Kalmianum.*

Syngenesia Aequalis.

323-325.—Sonchus *oleraceus,* and 2 other species.

326.—Lactuca.

327.—Prenanthes.

328.—Leontodon.

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329.—Hieracium, according to its habitus, but according to the general characters rather an Apargia.

330.—Carduus certainly a new species.

331.—Bidens.

332-333.—Cacalia, 2 species.

334.—Santolina.

Syngenesia Superflua.

335.—Tanacetum.

336, 337.—Artemisia.

338.—Sigesbeckia orientalis?

339, 340.—Erigeron, 2 species.

341-345.—Senecio vulgaris (not indigenous, but now pretty common), and at least 4 species more.

346.—A purple-flowered plant, similar to Senecio *vulgaris*, but with a simple cup.

347.—Inula.

348-352.—Gnaphalium, 6 species.

Syngenesia Necessaria.

354.—Filago.

355-357.—Conyza, 3 species.

358.—Rudbeckia?

359.—Centaurea.

360-362.—Three species of a new genus, as I suppose; many more female flowers than males, and the former without a corolla.

Gynandria.

363-382.—I have as yet found 19 Orchideae, of very diversified construction, some very pretty. About half of them are parasitical on trees, and some on rocks.

383.—Aristolochia, 1 species.

Monoecia Monandria.

384, 385.—Zannichellia *palustris*, and another species with naked seed, and smaller.

386.—Arum. All the smaller specimens have invariably only stamens, the larger ones only pistils. Amongst the great number of flowers which I examined, I found only one instance of an hermaphrodite flower.

387.—Ficus, one species.

Monoecia Triandria.

388, 389.—Carex, two, if not more; or new genera.

390.—Two species of a shrub, having the habitus of a Phyllanthus, with the fructification approaching to that of Tragia.

391.—Tragia, a new species, next to Tr. *indica*.

392.—A shrub which seems to be polygamous; if monoecous, next to Hernandia; if an hermaphrodite, next to Rumphia or Comocladia.

Monoecia Tetrandria.

393.—A water-plant with the habitus of Myriophyllum.

394-401.—Urtica. Eight species; two or three of which are burning.

402, 403.—Parietaria, 2 species.

404.—Morus.

Monoecia Pentandria.

405, 406.—Amaranthus *tristis?* an *spinosus?*

Monoecia Octandria.

407, 408.—*Perimy*, native name; is said to grow also in the low country and to be medicinal; 2 species of a genus which is not enumerated in Persoon.

Monoecia Monadelphia.

409.—Phyllanthus; towards the foot of the hills.

410.—Croton.

411.—Ricinus *communis*.

412.—A tree; 3-5 pistils.

413-417.—Bryonia and 4-5 other Cucurbitaceæ.

Dioecia Diandria.

418.—Salix. The male flowers I have not yet found on the tree.

Dioecia Tetrandria.

419, 420.—Viscum; 2 species, neither of which is described, as far as I can discern, in Dr. Roxburgh's Flora Indica.

Dioecia Hexandria.

421.—Phœnix?

422-424.—A climber, at least 3 species; not enumerated in Persoon.

Dioecia Dodecandria.

425.—*Villagadoo*, native name of a large shrub or small tree; 15 stamens invariably. Perhaps 2 species.

Dioecia Monadelphia.

426-428.—Two species of a Phallus-like plant; perhaps related to Rafflesia. Parasitical on the root of trees, as it appears to me. Difficult to be found.

Cryptogamia.

429.—Equisetum, 1, if not 3 species; I have found as yet the flower of only one.

430, 431.—Lycopodium, 2 species.

432.—Osmunda.

433.—Ophioglossum.

434-439.—Jungermania; more than 6 species.

440.—*An articulated parasite, if not a Viscum*; I have not yet succeeded in discovering the flower, although it has seed similar to the two other species of Viscum.

441.—Fontinalis.

442.—Marchantia.

443-449.—*Polypodium*, 11 *species*.

450-452.—Aspidium, 3 species.

453-464.—Asplenium, 7 species.

465-468.—Pteris, 4 species.

469, 470—Adiantum, 3 species.

471.—Acrostichum.

Lichens and Musci a great variety; one Boletus and some other Fungi. I have observed one Conferva, and a Polypus, scarcely to be distinguished from a water-plant; the flower-like animalcule becomes, when growing old, incrustated with the house of a snail. It is found in water-brooks.

P. S.—My researches have been as yet confined almost entirely to the mere environs of Ootacamund. The sides of the hills towards the foot, in the deeper valleys, contain a great variety of purely Asiatic species and genera; but my other engagements and even want of the necessary books, have prevented my examining and classifying them. I have therefore not enumerated here a great number of plants, including all the grasses, which I have actually collected.

Appendix, No. IX.

Extracts from Captain J. Ouchterlony's Memoir submitted to the Madras Government in 1847; *as noticed in the list of publications annexed.**

The Neilgherries, or rather the plateau formed by their summits, are by no means densely wooded, the forests occurring in distinct and singularly isolated patches, in hollows, on slopes, and sometimes on the very apex of a lofty hill, becoming luxuriant and extensive only when they approach the crests of the mountains, and run along the valleys into the plains below. This absence of forest in a region in which, from its position between the tropics, from the abundance of moisture, and from the great depth and richness of the soil, the utmost luxuriance in this respect would be looked for, is very remarkable; and leads me to conclude, that vast tracts of primeval forest land must have been cleared to make room for cultivation, at no very distant period.

Owing to the great elevation, at which the inhabited summit of the Neilgherries stands, and the consequent rarefaction of its atmosphere aided doubtless, in some degree, by the beneficial influence of the luxuriant vegetation which clothes them, the district, although distant only 11 degrees from the Equator, enjoys a climate now famed for its great salubrity, and remarkable evenness in its seasons, with a temperature which falls, in the coldest month of the year, to the freezing point, and seldom in the hottest, reaches 75° in the shade. In stating this, I of course refer to the general circumstances of temperature which prevail, for seasons have of course occurred during which, from particular atmospheric causes, the mercury may have risen occasionally above this estimate.

The coldest season is during the months of December and January, and the hottest about April and May, though this latter season is not so certain, depending mainly upon the character and time of setting in

* A copy of this Memoir has been presented by the Editor to the Ootacamund Library, and it is well deserving of perusal by all visitors to the Hills.

of the rainy, or S. W. monsoon. The hottest period of the day is about 2 o'clock or 2*h*. 40*m*. P. M. and the extreme range of temperature, from sunrise to that time, averages most commonly 16° throughout the year. The variation is of course the greatest at the time of frost, viz., January and December, when the extreme radiation, which goes on during clear nights, produces excessive cold towards sunrise, after which, the sun's rays, shining with great fierceness through the rarefied atmosphere, speedily restore heat to the earth, and the temperature of the air rises in proportion. Similar causes, reversed in their action, necessarily produce sudden and great cold after sunset, rendering the climate at this season (and indeed at all seasons more or less) one, in which the most healthy residents, and especially those who have recently come under its influence, stand in need of caution in their mode of encountering its vicissitudes. For the reasons alluded to, I would venture to remark, that very early and very late parades, according to the practice of the plains, will be found injurious to European troops located on these Hills, and especially to those men whose constitutions have been worn by long residence in a tropical climate.

The chief station, Ootacamund, from its superior elevation (7,300 feet above the level of the sea) is more exposed to this unfavourable action than the two minor stations, Coonoor, and Kotergherry, which are each 6,000 feet above the level of the sea: although these latter are by no means exempt from the same influence, especially during the cold season, as will be seen by the Tables appended to this memoir. A very great advantage, enjoyed by the Neilgherries as a sanitarium, exists in the means which are afforded to an invalid to select the peculiar kind of climate which best suits the malady under which he is suffering —by the existence of three settlements, each under Medical charge, situated in different parts of the range, each having a different aspect, and each a climate peculiar to itself: that of Ootacamund being the coldest—but most damp, Kotergherry the next in the scale, and that of Coonoor the warmest. Thus, an invalid whose habits or state of constitution render the change, from the torrid heat of the plains to the penetrating cold of Ootacamund, too great and sudden, has the opportunity and option of acclimatizing himself at either of the minor stations, before exposing himself to the vicissitudes of climate which await him on the highest level.

The resources of this highly favored region are as diversified and valuable, as they appear easy of attainment, and are comparatively inexhaustible. I commence the long list of productions, which the Neilgherries are

capable of supplying, with wheat, as one of the most important, and as one moreover which the Honorable Court of Directors appear at the present time to be much interested in collecting data regarding, from all districts in India capable of producing it.

I have taken the totals from the Seebundy accounts of 1847 or Fusly 1257, as rendered orally in the cutcherry. From these it appears that in 1847, 70 "vullums" of land were cultivated for wheat, each vullum producing on the average 400 "kolagums." This "kolagum" which is a measure peculiar to the Hill tribes, contains 226 cubic inches, and hence the quantity produced was

3,000 bushels
or 375 quarters

the weight of a kolagum of average wheat (husked) is I find 7lbs. hence the *bushel* of Neilgherry wheat weighs......68$\frac{3}{5}$ lbs. avoirdupois
or a quarter.........548$\frac{4}{5}$ " "

A "vullum" of land is equivalent to 2 cawnies, 21 grounds, and 864 square feet. Hence the total quantity of land cultivated for wheat at the present time is, 202 cawnies, or 267 acres: and the produce is 14$\frac{7}{10}$ bushels per cawny, or 11$\frac{1}{8}$ bushels per acre. The return in moderately good land cultivated for wheat is 40 to 1; or 40 bushels reaped for 1 bushel sown.

That the quantity of wheat, at present produced on the Neilgherries, could be very greatly increased, there cannot be a doubt, provided a better system of husbandry were introduced, and better seed imported from Europe, and distributed amongst the agricultural tribes.

The whole of this Hill district, including the Koondah mountains, is eminently well suited, in point both of soil and climate, for the production of wheat, but, as the last mentioned tract is not yet surveyed, it must at present be lost sight of, although I feel confident it will be found on examination, to furnish a very important addition to the gross amount of land estimated as suitable for the cultivation treated of, and which at present lies totally waste and useless.

The quantity of land thus lost to the state I calculate to amount to no less than 200,000 acres, as is shown by the following statement:—

		Square Acres.
Total content of the geographical surface of the Neilgherries		268,494
Of this quantity, there are now under cultivation, including lands lying fallow ....Sq. Acres	31,434	

Pasturage, to be reserved for the cattle of the Todars, at the exaggerated rate of 200 acres per 100 head (less than 40 per 100 being allowed by the revenue authorities in the calculation for assessment), for an average of 2,000 head of buffaloes will be	„	4,000	
Pasturage, to be reserved for the cattle of the Burghers, consisting of buffaloes and bullocks, averaging 8,000 head at 100 acres per 100 head	„	8,000	
Land occupied by the Station of Ootacamund, public buildings, roads, &c.....................	„	6,000	
Village sites, sacred groves, &c.	„	2,000	
Tracts of rocky ground, morasses, and other land not immediately fit for cultivation (although these might well be considered as compensated by the gain of surface introduced through the undulations of the land.)	„	17,000	
		Deduct...	68,194
		and there is a remainder of...	200,000

acres entirely unoccupied and waste, being either covered with forest, or lying under grass not required for pasturage.

It has been already stated, that the natives obtain from their wheat lands a quantity of grain equivalent to 11¼ bushels per acre, but, as the depth to which they plough their fields never exceeds 7 inches, and for the most part is barely 6, and as they give them only the most meagre allowance of sun-dried and exhausted manure, never exceeding (as far as I have been able to ascertain by counting the baskets brought and measuring spaces of land dressed with it) half a ton per acre, and this not ploughed well into the ground, but merely scraped into the surface furrows, and as they never supply the land with what, from the composition of the soil, it so much needs, viz. lime, it may be safely assumed that under a proper system of tillage this amount of produce could be at least trebled, or, at a very low estimate, 4 quarters of wheat could be obtained from one acre.

I may therefore safely affirm that this district is capable of furnishing, for export to Europe, from 4 to 500,000 quarters of wheat of a

quality far superior to that which is at present raised, and at a cost sufficiently low (the distance to the nearest shipping port being only 110 miles, 36 miles of which are performed by water) to admit of large profits being realized by the growers, even when the price in England is so low as 65 shillings a quarter.

After giving an account of the cultivation of barley of which 5,433 acres are cultivated Capt. Ouchterlony proceeds thus.

Before quitting the subject of barley, I cannot refrain from adverting to one immediately connected with it, and which I deem of so much importance, that although I am not sanguine in my hopes that Government may be induced by any representation made by me to institute experimental proceedings, with a view to test the feasibility of the scheme, I still consider it my duty to place on record in this memoir, the results of experiments which I have had favorable opportunities of making, under the impression that a time must sooner or later come when this, amongst many other valuable resources of these Hills, will be fully developed and taken advantage of.

I allude to the subject of fermented malt liquors which can be made on the Neilgherries with the greatest facility in all the details of the process, and at a cost so trifling as to enable the commissariat to supply the European troops at the three stations more immediately in the vicinity of the Hills, viz., Bangalore, Trichinopoly and Cannanore, with both ale and porter, at a rate, calculated on an extreme estimate, not exceeding 10 annas per imperial gallon delivered to the men from the cask in the canteen, or 2½ annas per quart, equivalent to 3¼*d.* per pot.

Independent of the importance, both in a moral and economic point of view, of supplying to the troops a liquor which, from its goodness and cheapness, will induce the majority to prefer it to ardent spirits, the subject becomes still more entitled to consideration from the advantages which must result from its successful issue, when the projected measure for the permanent location of a regiment of European troops on the Neilgherries shall be carried out: for as the chief item in the estimate of cost is the carriage from the brewery to the station in the plains, beer will be supplied to those resident on the spot at a greatly diminished rate.

A very favorable opportunity will also be offered for bringing the project into practical operation when a regiment is stationed on the Hills, because amongst the men many brewers and malsters by trade will no doubt be found, and by the practical knowledge of these men many difficulties in the details of the process which experimentalists

like myself encounter, will be speedily overcome. An inspection of the Tables of temperature given in the appendix to this memoir will at once show that the first part of the process of the manufacture of beer, viz., the conversion of barley into malt, can be carried on here as well as in any part of Great Britain; for although the range of the mercury may appear so great as to endanger the success of the process by causing the germination to proceed too rapidly, this evil can be readily averted by placing the malting floors in buildings with thick stone, or even mud walls, covered with thatched roofs elevated considerably so as to deflect the rays of the sun, and preserve an even and low temperature throughout the day. The temperature found most suitable to malting in England is about 60° to 62°, and this degree of heat could be maintained, without excess, in malting sheds on these Hills throughout at least 9 months in the year.

I must observe, however, that the barley grown here is so poor in quality, so light in the grain, and containing in a given measure so large a proportion of husk in excess of what the same quantity of English barley would produce, that the malt made from it yields in the mash but a very disproportionate quantity of saccharine matter, rendering it necessary to employ raw sugar as an adjunct, to produce a wort of sufficient strength. But this, which might elsewhere be considered an objection on the score of expense, is here of easy remedy, since in the immediate vicinity of the Neilgherries, viz., in Mysore, excellent sugar is manufactured in great abundance, and, at a rate so low, that at this present time, February, 1848, it is being sold in the bazar of Ootacamund at 3 Rs. 12 annas per maund of 25 lbs. weight, being equivalent to 33*s*. per cwt. Formerly, a prejudice existed against the employment of sugar in the manufacture of beer, but, as it is now seen that the permission to introduce it into breweries in England, which has been recently granted by the legislature, is regarded by the public as a signal boon, it must be self-evident that since this important article is, comparatively speaking, indigenous to the spot, cheap, excellent and abundant, and as the climate is in all respects eminently well adapted for carrying on the process of vinous fermentation, as well as that of malting, beer and porter can, under proper management, be produced on the Neilgherries, in every respect as wholesome and good as that now imported from England, and at a cost less by one-half, even including cartage to the station where it is to be consumed.

I beg leave to observe, that in advancing these remarks, I do not base my expectations and assurances on mere surmise or theoretical

views of the subject, but upon the results of actual experience, as I have now brewed several casks of beer without a single failure in the principal parts of the process, viz., malting, fermentation, and fining, while its quality has been much approved of by many persons who have tasted it, amongst whom I may enumerate, Mr. Drury, the senior member of the Board of Revenue; Captain Bell, Secretary to the Board; Major General Kennett, Lord Gifford, General Gibson, with many others. In consequence of the success which attended my early experiments, in conducting which I employed Malt prepared by myself from Hill-barley, with hops and dried yeast imported from England, and my confidence in the success of the scheme if entered into by Government, I addressed a letter to the Commissary General upon the subject, communicating such details as seemed of interest, and offering to carry on further trials on a small scale, at my own expense, if a copper could be supplied to me temporarily on Indent from the commissariat stores. I also sent samples of some beer which I had brewed, but which had an unpleasant taste communicated to it owing to my having employed "gour" or "raw jaggery" in the brewing in place of refined sugar, without taking the precaution of cleansing it from the dirt and gummy matter with which this article is generally contaminated. I was not so fortunate as to receive a reply to this letter (beyond a message through a third party) and this absence of encouragement prevented me from following the matter further, but I may add, that for my own use I continued the manufacture with a success, which convinces me that it is only necessary to extend the scale upon which my operations are carried, and to secure practical knowledge in the more important details of the process, to ensure the most complete realization of my anticipations regarding the vast benefits to be derived by this item in the list of productive resources of the Neilgherries.

The following is an estimate of the cost of ale brewed here, from *actual* experiment. In England to make a hogshead (66 gallons) of strong ale intended for export to the tropics, the brewers use

6 bushels of malt,
and 6 lbs. of hops:

now, it has been ascertained, since the introduction of sugar into British breweries, that

180 lbs. of moist sugar are equivalent to
1 quarter, or 8 bushels of malt.

If therefore both malt and sugar are employed in equal proportions,

the hogshead will require 3 bushels of malt and 72 lbs. of sugar. Considering the Hill-malt to be 100 per cent. inferior to English malt, I made use of 6 bushels of malt and 72 lbs. of sugar.

Estimate.

6 bushels of barley, or 60 kolagums at 12 kolagums per rupee, ...	Rs.	5	0	0
72 lbs. (3 maunds) of sugar, at 4 rupees per maund, .	„	12	0	0
7 lbs. of hops, imported from England, ...	„	7	0	0
Fuel for kiln drying malt, and boiling, ...	„	1	4	0
Proportion of labour in steeping barley, turning malt, drawing water, brewing, &c.	„	2	0	0
Sundries, ...	„	1	4	0
Cartage to Bangalore (1 cask a load,)	„	9	0	0
Total Rupees..		37	8	0

A hogshead should run 60 gallons of clear beer, hence Rs 37.8 = 10 annas per imperial gallon, for the gross cost.

This estimate might be reduced in many of its items, if a Government brewery were established here upon an extended scale. In the first place, all the yeast produced would meet with a ready sale in Ootacamund for the bakeries, which are now dependent on the low country for a supply of toddy, with which bread is fermented all over India, and which, having to travel a considerable distance before it reaches the settlement, is often found to have passed into the stage of acetous fermentation, rendering it either unfit to make bread with, or causing the bread to have an unwholesome and bad taste. A large quantity of yeast would also be daily required for the bake-houses of the European regiment located here. The estimate for hops, at 1 Rupee per pound delivered here, is far too high, as, if sent out by the Home Government in quantity, they could not possibly stand in, at the brewery, at so high a rate; and the cost of labour would be diminished if a large quantity of beer were brewed daily.

I would further beg leave to dwell, upon the importance to this district, of the establishment of such a manufacture, upon a large scale, in a Revenue point of view, which, from the great demand it would create for barley, would soon lead to the reclamation of the greater part of the waste but rich lands, which are now left untouched, through want of stimulus to the industry of the Hill tribes, and also, as it appears to me, in some measure, to the want of hands to till them—a deficiency

which would, however, be speedily remedied by immigration from Mysore, and the plains around. In fact, were it not for the assumption of absolute right over all the lands, waste and cultivated, which are situated on the plateau of these Hills, by the Todars, Burghers, and Kothers, there is no doubt that many low country people, who come up here seeking employment as Coolies, would form settlements, and permanently locate themselves wherever they could obtain possession of land to bring under cultivation. Should Government at any future time see fit to create an establishment on these Hills for the manufacture of beer, it would be very advisable, and indeed in the first instance almost indispensable, to connect with it a Government farm, to serve as a model for the introduction of improvements in husbandry, both in regard to ploughing and dressing the land, and in the preparation of good manure, a department of the farmer's profession of which the Hill agriculturists appear to have no knowledge whatever. Good seed must be sent from England, and distributed amongst the Burghers, upon whose exertions the stimulus of a premium, in the shape of a higher price for barley of a superior description, would doubtless soon produce a beneficial effect, while, imitation of the system pursued by the employés of Government in the management of the farm lands would also, it is supposed, lead to the adoption of more civilized notions and practice of agriculture, than are now to be found prevailing in any part of this rich, but ill appreciated, Hill tract. In this climate Europeans might with perfect safety as regards their health, go through all the out-of-doors labour which falls to the lot of farming men in England. They do so in New Zealand, and Port Adelaide, where the climate is unquestionably less temperate than here, and, as on the Neilgherries the actual exertion of European bodily strength would only be required at particular seasons of the farming year, such as in the direction of the plough, and the use of the scythe, while superintendence and instruction of the Native labourers would alone be required, on the part of a European, in conducting the minor details of a farm, I cannot but think that, in many respects, a far finer field is offered on these Hills to the emigrant farmer from home, than is met with by the many who flock to the Australian settlements.

Here, cooly labour is very cheap, 2 annas or 2¾*d.* a day being the regular rate of pay for a working man who can perform any duty pertaining to spade husbandry, and undertake all the duties of a farm, which, in England, fall to the lot of the common labourer, such as hedging and,ditching, trenching, hoeing, reaping, stacking, thatching,

&c. &c. A shilling a day, or ½ a rupee, is the pay of a bricklayer or carpenter; men to look after 2 horses receive 14 shillings, or 7 rupees a month, cowherds 4 or 5 shillings, and all other labour in proportion. These advantages, coupled with those presented by a ready and ever demanding market for such articles of produce as wheat, barley, (oats if raised), clover, hay (of which article an immense quantity would be consumed in Ootacamund if it was procurable), turnips, potatoes (Ceylon offering a very favourable market for this vegetable), butter, eggs, and stock of all descriptions, both for butcher's meat and for salting for ship use, would surely, it is to be supposed, tempt many indigent farmers to this hilly region, whose necessities impel them to emigrate from the mother-country, but whose steps are stayed by the warnings uttered by the many hundreds of their unfortunate fellow-countrymen, who have hurried heedlessly out to the Australian colonies, only to meet with disappointment and ruin.

Should circumstances ever induce Government to establish a Farm on these Hills, for the purpose of encouraging the growth and extending the cultivation of wheat and barley, I should recommend two sites for its location; one on the elevated tract of land to the westward of the Pykara river, commencing at the north-west angle of the plateau near Neddiwuttum, and extending southward to "Makoorty peak," the whole of which may be said to be uninhabited, there being only 7 small Todar munds situated in it, and these not all occupied, while the soil is for the most part excellent, pasturage abundant, and the land covered, in many parts, with fine forest, rendering the tract (which contains about 12,000 acres) admirably adapted for the purpose which I venture to suggest.

The other site is, a fine tract of land forming a sort of promontory in the north-east angle of the plateau of the Hills called "Kodenaad," which is equally uninhabited, having only 3 occupied Todar munds within its limits; the soil good, and forest abundant, many fine-wooded valleys extending through it, and offering a most eligible locality for a farm. The tract contains about 7,000 acres.

The other grain productions of the Neilgherries are, ragghee, samee, korallie, tenney, buttacudaley (a kind of pea), shamungee (a kind of gram), garlic, onions kudagoo (mustard seed), vendium, opium and potatoes. Almost all the grains enumerated are raised solely for home consumption— and, excepting korallie, for which about 1,200 vellums of land are cultivated yearly, the quantity of each which is produced is insignificant.

To this list of products Captain Ouchterlony adds, Coffee, Silk, Hides to any extent, Castor Oil, Bees-wax, &c. and proceeds as follows.

Numerous plantations of coffee-trees are scattered about the Hills, principally situated on the slopes descending to the plains, where the elevation suitable for the growth of this shrub can be obtained. Until within the last two or three years, coffee-plantations were only found on the eastern side of the Hills, but representations of the excellent quality of the berry, and of the advantages attending its cultivation on the Neilgherries, having been made in Ceylon, the attention of the skilful planters of that island was attracted in this direction, and the result has been the opening of several plantations, where I ventured to predict, in a former memoir, that this description of cultivation would sooner or later be introduced, viz., on the western slopes of the Hills, where advantages are offered to the planter eminently superior to those, the possession of which has, of late years, so greatly enhanced the value and importance of the neighbouring island.*

The chief of all is, the cheapness of labour, a cooly receiving even on distant plantations in the "Koondahs" 4 rupees a month, while in Ceylon 8, 9 and even 10 are given; while in the pay of artizans such as carpenters, sawyers, masons, &c, a still greater disparity exists in favor of this district. Second to this is, the abundance of labour which can always be commanded here, the neighbouring provinces of Malabar, Mysore, and Coimbatore supplying coolies in sufficient numbers to meet all demands, and at all seasons of the year; while in Ceylon the utmost difficulty is experienced, in most parts, to obtain labourers when urgently required; and at all times the supply of coolies is extremely precarious. Planters here have also the advantage of a good public road, passing through the heart of the forest land of the "Koondahs," and affording ready means for obtaining supplies, machinery, &c. or of sending away produce for shipment by a route, of which less than 30 miles are by land and 36 by water, to the port of Calicut. One estate which was opened about 2 years ago near "Wallahkadoo" half way down the Koondah ghaut, by the late Archdeacon of Ceylon and Mr. Hutson, also of that island, and which I had an opportunity of inspect-

* The Editor on his late visit ascertained, as noticed in the chapter on Soil and Productions, that the produce of one plantation to the west, comprising 600 acres, amounted to 250 tons, and realized in the London market 78s. a cwt. in the year 1855-56.

ing recently, on my way up from the western coast, is in a very flourishing condition, and has every promise of turning out most successfully. In its neighbourhood are tracts of virgin forest land of immense extent, stretching away over the innumerable spurs and valleys into which the Koondahs are broken as they slope downwards towards the Ponany river, all eminently suitable for coffee planting, having the proper elevation, a good and rich soil, and enjoying a climate particularly favorable to the nourishment of this peculiar shrub. If the success which is looked for crowns the exertions and adventure of the first speculators, there can be little doubt that when the Koondah coffee appears regularly in the market as a production of this district, the attention of capitalists at home will be directed to it, and the western portion of this mountain tract become a source of great increase to the revenue of the country, while it will afford employment and subsistence to the many indigent people in the neighbouring provinces, who, at the present time, suffer such privations from the want of it, between the seasons of sowing and reaping the crops in the plains, and indeed for more than three quarters of the year.

The other, or what may be called the old plantations in the other parts of the Hills, but principally on the north-eastern slopes, are insignificant in point of size, but remarkable for the peculiarly fine flavour of the coffee produced, which is considered to be owing to the high elevation at which most of them are situated. Some plantations near Coonoor and Kotergherry are 5,000 feet above the level of the sea, but it seems to me that the advantage derived from this superiority of flavour is more than counterbalanced by the general want of vigour and luxuriance of the coffee-trees, which evidently do not thrive in this latitude so well at an elevation above 4,500 feet, as between that and 3,000 feet. It is not easy to estimate the amount of land at present under actual cultivation for coffee on the Neilgherries, as, in most cases, the coffee-fields are so mixed up with the mulberry-grounds, that it is difficult to arrive at the precise extent of each, but it may be pronounced not to exceed 280 acres on the eastern side, and 300 acres on the western.* The general return of those on the eastern side, which are the only ones at present in bearing, is on an average about 6 to 7 cwt. per acre; which is a remunerative rate under the prevailing circumstances of cheap labour, but the trees require manure to keep them up to this rate of bearing, and more care in pruning and managing than is bestowed upon them.

* See preceding Note.

The utmost obscurity hangs over the early history of the Neilgherry Hills, far beyond the period of the immigration of the "Todars" or "Todawars;" tradition amongst the present inhabitants, affords no clue whatever to trace it. That they have been in former ages inhabited, and that by a very peculiar race, evidence sufficient to show is furnished by the existence of the numerous "cairns," or rude tombs found upon the summits of almost all the loftier mountains in every part of the Hills, the origin of which is so remote, that the Todars, recognized as the most ancient inhabitants, have no tradition amongst themselves, bequeathed by their ancestors, which even guides us to a surmise, as to the race of people by whom they were constructed. As affording thus almost the only land-marks, by which speculation as to the ancient state of this remarkable region can be guided, these "cairns" seem to merit a brief description. They are invariably situated, as has been already mentioned, on the highest summits of the Hills, sometimes single but more frequently in groups or rows of from 3 to 6. They are circular in form, raised with large unhewn blocks of stone 4 feet or more above the level of the ground, and varying in diameter from 12 or 15 feet to 25 or 30. The interior is hollowed out to some depth below the original surface, usually until the solid rock is reached, and the space thus cleared filled with earthen pots, with the covers strongly luted on, pieces of bone, charcoal, and fragments of pottery, all tightly packed in a soil so black and finely pulverized, as to give cause to suppose it to be decomposed animal matter. On breaking these pots or urns, which many of them are in the form of, they are found to contain ashes, charcoal and pieces of half calcined bones; with sometimes a small quantity of a pure scentless fluid, which in two instances I found to be pure water slightly impregnated with lime. Images of tigers, elks, bisons, leopards and some domestic animals, pieces of half decomposed bronze resembling spear heads, tripods, &c., are also found occasionally, mixed with the other remains; but it is a singular fact that on breaking up the strong pavement of slabs of stone, with which the cairns are covered in, and mining down until a second pavement is come upon, which, from its tightness and weight has, to all appearance, never been disturbed since it was first laid, we find on removing it that the contents of the vault below, instead of being laid in the order befitting the repose of consecrated ashes, are generally smashed and broken up and mixed with the soil leaving barely one or two pots of bones and ashes entire, just as though the pickaxe of the destroying explorer had been already there. Some ingenious writers have

endeavoured to build up, upon the evidence of these cairns, a theory to the effect, that their constructors must have been a tribe of the ancient Scythians, who having wandered into this remote part of Asia, preferred a settlement on the Hills they had discovered, to the hopeless undertaking of a return; and pursuing their hypothesis, and discovering instances in the customs and habits of the present Todars, which assimilate them to the race which history describes under the name of Scythians, they pass on to the conclusion that their ancestors were founders of these tombs, and the descendants of the ancient Scythians. But this assumption is in my opinion erroneous. So prejudiced and bigoted a race as the Todars would naturally cherish, with the utmost veneration and solicitude, any vestiges of mortality, which their most vague tradition should point to as monuments of their ancestors; and therefore, when we find them offering not the slightest objection to the cairns being broken open and their contents rifled, and even voluntarily guiding strangers to unexplored ones, aiding them in the work of destruction, it is reasonable to conclude that they form no link of communication between the present race of Todars, and any tribe of people by whom these singular monuments may have been raised.

All clue being thus lost, it would be idle to follow out further any speculation as to the history of the Neilgherries prior to the first coming to them of the Todars, for, as no coins or inscriptions or even hieroglyphics have been found in any of the cairns, or on their contents, there exists no evidence whatever by which inquiry could be guided into the right course.

With the Todars then, commences the only (partially) known history of the Neilgherries.

At the time of their immigrating, they probably found no aboriginal inhabitants settled on them, and seeing, in the solitary and inaccessible character of the mountain region which they had discovered, a fitting spot for the undisturbed exercise of their singular religion, and peculiar pastoral habits—for the former of which they had possibly endured persecution amongst the tribes of the plains—they determined on permanently occupying it. Ages, according to their belief, must have passed while they remained in undisturbed possession of the Hills, extending over such a space of time, that they express their belief that the founders of their tribe were created on them; until at length a small band of Kothers found their way up from the plains, and besought permission to till certain tracts of land which they indicated. From this era may be said to have commenced, the self-arrogated

sovereignty of the Todars over the land forming the plateau of the Neilgherries, as, conceding the privilege sought for by the new comers, they stipulated that a certain proportion of all the grains which they might produce from the soil, should be annually presented to them as "goodoo" or tribute, in acknowledgment of their feudal right over the territory. Not long after this, and according to their traditions, 3 or 4 centuries ago, a party of "Burghers," or "Buddughurs" emigrated from the "North country," (probably the Northern part of Mysore and Canara,) and came to the Neilgherries; and being good cultivators, at once perceived the advantages offered to them in the virgin and rich soil which they saw on all sides. They accordingly appear to have obtained permission to settle and cultivate land, upon the same terms as those granted to the Kothers, and inviting more of their brethren to join them, they soon swelled into a numerous tribe and spread over the Hills, constructing their villages, and enclosing their fields (and doubtless clearing away much forest) in all directions. I can find no evidence of any sovereign ruler having been acknowledged amongst the Hill people, until about a century before the reign of Hydar Ally in Mysore, when, according to the tales of the Kothers and Burghers, there were 3 princes or chiefs who had sway over them. one in Todanaad, who resided in a fortress called Mullaycotta, the walls and ditch of which still exist on a Hill to the eastward of the village of "Shoolooroo," and westward of Mootenaad and the Seegoor pass, one in Meykenaad, in the fortress, the ruins of which are now called "Hoolicul Droog" situated on a lofty ridge overlooking the Coonoor pass, and a third in Parungenaad, in a fort the site of which is still pointed out near Kotergherry, and called "Konagerry," though no vestige of a fort remains now recognizable. Their traditions state, that at this time, in consequence of disputes between the Burghers and Kothers regarding their respective boundaries, a general settlement of their lands took place, under the auspices of the three chiefs, when the lines of demarcation were definitively fixed; and though only by oral indication, in consequence of the ignorance of reading and writing which then, as now, prevailed, the limits of the territory of each tribe were so distinctly identified, that ever since, up to the present time, no disputes about them have ever been known to occur.

APPENDIX, No. X.

Extract from Captain Harkness' Account of the Inhabitants of the Neilgherry Hills; noticed in the list of publications annexed.

The appearance of the TODAS or Toruwars, who may be considered the original inhabitants of the hills, is very prepossessing. Generally above the common height, athletic and well made, their bold bearing, and open and expressive countenances, lead immediately to the conclusion that they must be of a different race to their neighbours of the same hue, and the question naturally arises, who can they be? The word Toruwars is the Tamil term for herdsmen. This remnant of a race, perhaps the most extraordinary of any known, does not exceed in number, including both sexes, and of all ages, six hundred.

They never wear any covering to the head, whatever the weather may be, but allow the hair to grow to an equal length, of about six or seven inches; parted from the centre or crown, it forms into natural bushy circlets all round, and at a short distance more resembles some artificial decoration than the simple adornment of nature. The hair of the face also is allowed a similar freedom of growth, and in every instance, except from the effect of age, it is of a jet black, and of the same degree of softness, as that of the natives of the low country.

A large, full, and speaking eye, Roman nose, fine teeth, and pleasing contour, having occasionally the appearance of great gravity, but seeming ever ready to fall into the expression of cheerfulness and good humour, are natural marks, prominently distinguishing them from al other natives of India.

The women are not of a stature proportionate to that of the men, but of complexion generally some shades lighter, the consequence perhaps of less exposure to the weather, with a strongly feminine cast of the same expressive features as the men; most of them, and particularly the younger, have beautiful long black tresses, which flow in unrestrained luxuriance over the neck and shoulders, or are frequently disposed in a profusion of natural ringlets on each side of the head

With a modest and retiring demeanour, they are perfectly free from the ungracious and menial-like timidity of the generality of the sex of the low country; and enter into conversation with a stranger, with a confidence and self-possession, becoming in the eyes of Europeans, and strongly characteristic of a system of manners and customs widely differing from those of their neighbours.

They wear necklaces of twisted hair or black thread, with silver clasps, and here and there a bead, and suspended to them bunches of cowry shells, which hang down from the back of the neck between the shoulders. On the arms, immediately above the elbow, they wear a pair of armlets of brass, those of the right arm being much larger than those of the left; silver bracelets are on the wrists, and on the fingers and thumbs of each hand, a number of rings of various descriptions. They also wear a zone round the waist, composed of a sort of chain work, of either silver or mixed metal resembling brass.

The upper garment, or mantle, resembles that of the men; but it is worn differently, and, reaching to the feet, envelopes the whole frame.

This attire is by no means graceful; it gives them an unfeminine and mummy-like appearance; and neither they nor the men having any pretensions to cleanliness: this wrapper is from that circumstance often rendered still more unseemly.

They are, however, a lively, laughter-loving race, and in the sudden transition and free expression of their sentiments, shew strength of feeling, and correctness of thought, little to be expected under such a garb.

Their life being in every respect a pastoral one, they do not congregate in towns or villages, but every family, or the principal branches of each family, live separately; and these places of their residence are called Morrts or Munds (corresponding to our word home).

In each of these morrts is a building, in size, construction, and appearance, superior to the others, a short distance apart from them, and surrounded by a wall. In this is carried on all the process of the dairy, such as making butter, clarifying and converting it into ghee, &c.; they also attach to this building a sacred feeling, and would not at first allow me to go near it, declaring that there was a deity within, whose malevolence would be provoked by my near approach.

The huts in which they dwell, and which are generally clustered together, very much resemble in appearance the tilt of a waggon. The roof, which is formed of thatch very neatly put on, is supported on posts, and thick rude planks of wood, which, excepting at the ends,

are little more than three feet in height. The whole building is about twelve feet in length, eight in breadth, and seven in height, from the ground to the ridge of the roof. At one end is a little door, two feet and half in height, by two feet broad, and this completes the whole external appearance of each dwelling. At a short distance is an area, of about forty or fifty yards in diameter, enclosed with a wall of rude stones, piled one upon another without cement, and in which the herd is secured during the night.

Each is prettily situated on a gentle slope, occupying a beautiful green on the borders of a wood, and with which, in most instances, they are partially surrounded. But, migrating from one morrt to another, or from one mountain side to that of another, as the seasons change, or as the pastures in their immediate vicinity begin to fail, and cultivating no grain or vegetables of any description, their morrts have none of those appearances which denote the long-established and settled residence; or which bespeak, on the part of the settler, peculiar attachment for the spot on which he lives.

They do not breed poultry, pigs, sheep, goats, or animals of any description, except the buffaloe; nor is the cow or ox (the creatures so highly valued, and even venerated by the people of the low country), held in any estimation, or considered worth keeping.

The only articles which the Todas produce are butter and ghee; such of the latter as they do not require for their own consumption, they dispose of to some of the neighbouring tribes, or barter for grain and cloth, and these transport it to the low country.

Evidently of a peaceful character, having no weapon of defence, no fastening to their dwellings further than the little door previously mentioned, (for, situated as their morrts are, they cannot be said to have sought it either from the forest or morass:) no protection against the wild beasts of the field, not even the nightly guardian or common watch dog, living rather in families than in societies, without any of those bonds of union which man in general is induced to form, from a sense of common danger, or to guard against the oppression of his neighbours, and, as previously mentioned, migrating from one part of the hills to another, the Todas pass their days in a manner quite peculiar to themselves, and apparently in all the silence, quiet, and rural simplicity, characteristic of a patriarchal government and a pastoral life.

Few in number, as before observed, not exceeding six hundred, and apparently a remnant of some tribe driven by religious persecution to

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seek safety in these mountains, they may have been taught by experience that it is wiser for them to live in fellowship, or quiescent submission, than to provoke hatred or hostility.

They, however, assert a claim to the soil, and declare that it was only by their sufferance that the other tribes came to reside on it; that they receive from them a payment in kind, not, however, for so many kaunies or acres, but for such a spot, measuring it with the eye; an indefinite sort of demarkation, which, where land is so plentiful, and the inhabitants so few, is not attended with any inconvenience.

Of the tribes here alluded to, one whom they call the Marves,* a race of Hindus, who but a few generations ago emigrated hither, to escape the oppression and tyranny of their masters, and who are ten times more numerous than the Todas themselves, speak of the latter, and treat them with a respect and observance denoting, that they either consider them superior in natural qualities, or that this deference is due to them by prescriptive right.

Whatever their religion may be, it is evident that it is generally misunderstood: and perhaps the true nature of it is altogether unknown. Of itself it forms a subject of curious inquiry; and one of which a correct understanding will perhaps go further than any other, to develope the history of this extraordinary people.

Nor has their religion, as far as I am able to judge, any resemblance to that of the Buddhist, the Moslem, or of any other people of the present day. They salute the sun in its rising, and believe, that after death the soul goes to Huma-norr or Ou-norr,† a country, respecting which, they seemed rather to look to me for information.

Their language, the pronunciation of which is deeply pectoral, appears to be quite distinct from the languages of the surrounding countries. With the Sanscrit it has not the least affinity in roots, construction, or sound; and, if I may venture to say so, as little with any other Asiatic language of the present day.

It may, perhaps, be said to have some resemblance to the vernacular Hindu languages of the Peninsula, but only in so far as these languages still possess simple words, not of Sanscrit origin; and the Tamil possessing by far the greater number of such words, the resemblance to it is consequently greatest. There are also two sounds, the Zah

* More generally known by the name of Barghers, Badacars, or Vadacars.

† Literally, the great country.

and the Ukh,* which are of constant occurrence in the Toda, and which in respect to the vernacular languages of the plain are peculiar to the Tamil, and its sister dialect, the Malayal'ma. Besides these, the pronouns, the plural, the honorary termination of verbs, and the negative verb, come nearer to the Tamil than to any of the other dialects.

With these exceptions, however, it differs widely, and bears so little affinity in genus, either to it or to any of the dialects of the present day, that although these hills have now been the seat of the principal collector's cutcherry for the last ten years, there is no instance of its having been acquired by any one of the native servants, sufficiently for them to understand the expression of the simplest occurrence.

They have no written character, nor any visible symbol by which to communicate their thoughts; and the language being merely oral, it is of course the more difficult to acquire.

At the foot of these mountains, and for a short distance within the forests, extending from their base into the plains, live a race of people, commonly known by the name of Erulars. They are divided into two classes, one called Urali, the other Curutali.

Above these, at a height varying from one to two thousand feet, in the clefts of the mountains, and little openings in the woods, with which at this elevation they are girt, live another race, calling themselves Curumbars. This race are all one class.

People, answering to the general description of both these tribes, are to be met with in many of the mountainous parts of the Peninsula, but the Erulars of this vicinity differ from them in many particulars; and the Curumbars, from their connexion with the tribes who inhabit the more elevated parts of mountains, and particularly with the Todas, are now quite distinct from the people bearing this name in other parts of the country.

Neither of these tribes know the use of the plough, or at least they do not use it to till any part of the lands which they occupy; and being quite unskilled in all the arts of life, their state of being is but little removed from that of utter uncivilization.

Their languages are jargons, formed from a mixture of those of the nations nearest to them, such as the Tamil, the Carnataca, or the Malayal'ma; that of the Curumbar having a considerable intermixture of

* At the present day, however, these two sounds are very imperfectly expressed in either the Tamil or the Malayal'ma, and it is not uncommon for other sounds to be substituted for them.

Toda. They may be classed as Hindus; and, to the introduction among them of some of the Hindu observances, they seem to owe the little civilization to which they can be said to have claim.

The Todas do not consider the Erulars as forming a part of the inhabitants of the hills, but they allow this designation to the Curumbars, whom they call Curbs, and from whom they receive certain services.

The next are the Cohatars. They occupy many of the elevated parts of the mountains.

They are a strange race, have no distinction of caste, and differ as much from the other tribes of the mountains as they do from all other natives of India. They cultivate a considerable quantity of the different kinds of millet, and of the poppy, and sometimes a little barley. They are the only artisans of the hills, being goldsmiths, potters, chucciléis, &c. They are not Hindus, but worship ideal gods of their own, which, however, they do not represent by any image. Their villages are, many of them, very prettily situated, and generally on a hill; and every hill thus occupied is called Cohatagiri, or, as more commonly pronounced, Cotagiri. These people the Todas call Cúvs, their term for mechanics.

We now come to the numerous, the most wealthy, and what must be considered the most civilized class of the inhabitants. These are the Burghers, or Buddagers.

By this general term is understood the whole of the people who, since a certain period, have migrated to these mountains. They divide themselves into no less than eight different classes, but are all Hindus of the Siva sect, and the dissimilitude among most of these classes is too trifling to be worthy of remark. The least respected among them are a class who, as well as being cultivators of the earth, also manufacture a coarse kind of sackcloth: other two of the classes are of the caste who wear the lingam, one being superior, and qualified to officiate as priests to the whole of the others: and another of the classes are repudiated Brahmins. These, however, still wear the sacerdotal string, and retain some privileges in the performance of their worship; but they are classed with the other people, and are without any pretension to superiority over them.

These several classes compose the tribe which by us is known by the general term Burgher.* They are the principal cultivators, and as

* Called by the natives, generally, and more properly, Badacars or Vadacars from Badacu, or Vadacu, north, having come to the hills from that quarter. In number about 10,000, of both sexes and all ages.

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their chief dependence is on husbandry, they may fairly be designated the farmers of the hills.

Their language is principally the Carnataca, having but a small intermixture of the Toda. The Todas, who also know as little as we do, in general, of the existence of any difference of caste among themselves, call them all Marvs, their term for a labourer.

But to return to that tribe which is the least in number of all the inhabitants of the hills, the Todas, or as they are more commonly called the Toruwars, a name given to them by the other tribes, or rather by natives of the plain, and which is not in use among themselves. They call themselves (par excellence) Man: and the question, "Is that a Burgher, or a Toda?" would with them be literally, "Is that a labourer, or a man?"

They are divided into two branches, or what may be considered two grand families. One called Peikis, or Taralis, and who are competent to hold all sacred offices; the other Kutas, or Tardas, who are competent only to hold minor ones within their own particular families, and who may be considered as the lay class.

Till within the last few generations, these two branches kept themselves quite distinct, and never intermarried; but since that period, intermarriages have taken place, and the progeny of these are called Mookhs, a general term for children or descendants.

APPENDIX, No. XI.

Extract from the Calcutta Review No. XXXI. September, 1851, "On the Mortality of European Soldiers in India,"

A single fact published in the *Quarterly Review*, and afterwards in a little half-crown pamphlet, some few years ago, by that popular writer, Sir Francis Head, attracted more attention to the subject of railways, than all the scientific volumes that had previously issued from the press. Thousands had been in the habit of travelling by "Rail;" but few were aware, that on *every Monday morning throughout the year*, on one particular railway, a new engine and tender, costing £1,250, were put upon the line. The fact was an astonishing one, and set men's minds thinking, and calculating, if this occurred on only one railway in the United Kingdom, what must be the enormous expense, and still more enormous incomings, of these undertakings, to enable them to return a profit?

Would it be thought less startling, or of less interest, with reference to the subject before us, viz., *the mortality of European troops*, in this country, to be told, that "the British soldier, *who now serves one* year in Bengal, encounters as much risk of life, as in three such battles as Waterloo?" It is, as if every private at present serving in H. M.'s regiments at Calcutta, Dinapore, and Allahabad, were called upon three times a year to expose himself to the dangers of such a conflict, in which one in forty of the combatants fell; and this, too, not for one year, but for several. Carry out the calculation still further, by adding the number of men invalided, and the number of those who die on their way home, or soon after reaching England; then, multiply the whole by the number of years that European troops have been serving in India, and reckon what has been the amount of mortality in the three presidencies during the last century!

The most valuable and accurate work that has ever been published on Medico-Military Statistics, is *Tulloh's Parliamentary Returns*: and it is much to be regretted that, out of the voluminous documents at present lying in the offices of H. M. Inspector-General, and the Honorable Company's Medical Boards at Calcutta, Bombay, and Madras, a

similar abstract has not been prepared by order of Government. Still there have been labourers in the cause, who, from time to time, have given to the public the benefit of their observations and researches, and have made earnest appeals to "the legislative branch" of the Government, for correction of the evils that exist.

Before going into the subject of Tropical Hygiene, which forms the bulk of Dr. Mackinnon's Treatise, we would collate from the different sources open to us, a few of the most important statistical facts, the correctness of which may be vouched for by the authority under which they were published. They will shew in a clear and tabular form, what the mortality of European soldiers, serving in India, amounts to, and what are the proportional rates of deaths at different stations, in different years:—

TABLE I.

Shewing the annual mortality from sickness in every 100 men, both European and Native, of the three armies of Bengal, Bombay and Madras, for the last 20 years.

In every 100	Bengal.	Bombay.	Madras.
Europeans	7.38	5.078	3.816
Natives	1.79	1.291	2.095

This table is taken from a valuable paper by Col. Sykes, on the "Vital statistics of the Indian army,"* and (it must be remembered) does not include casualties in the field, or while on service, nor yet the mortality from cholera in Scinde. The most striking fact here shewn is, that the loss of life amongst our European soldiery in Bengal, is *double* of what it is in Madras: or in other words, that whereas 74 out of every 1,000 die annually in Bengal, only 38 in the same number would be the loss in the sister presidency. The causes, by which this difference may be accounted for, we shall notice hereafter.

At Secunderabad, death mows down its victims with two-fold power. At this latter station, which is the most unhealthy in the Madras presidency, the average mortality among the *European troops, for fifteen* years previous to 1846-47, has been 75 per 1,000—being nearly double the average of the entire presidency, and more than double the average

* "Statistical Society's Journal."—*Vol. X, page* 121.

of the more healthy stations. The men composing the regiment, are crowded into small barracks and narrow verandahs, while the officers of the same regiment, and the detachment of artillery, who are quartered in more roomy barracks at no great distance, are comparatively healthy and free from disease.

Dr Burke, the late Inspector-General, speaking of this station, says, "The excess of casualties in H. M. regiment at Secunderabad over that of any corps in the other stations of the presidency, during four years, is 117 men; a loss, therefore, intrinsically of that station, exclusive of officers, women and children. It has been stated that every European soldier, landed in India, costs the state £100 sterling; calculating from which, the intrinsic loss of 117 European soldiers by Secunderabad in 4½ years is £11,700 sterling. But, as these 117 men have to be replaced, the doing so will cost another £11,700;—to which must be added the loss in acclimatizing these latter, amounting on the lowest calculation to one-eighth, or £1,462; giving a sum total of £24,862, as the actual loss sustained in 4½ years, or probably three lakhs of rupees in five years. But as Secunderabad would appear to have been a station for European troops for at least thirty years, the cost to the state for that period may be estimated at twelve lakhs at least."

Though much may be done by the means of draining, it cannot be denied, that some of our military stations, such as Berhampore,* Barrackpore, and Masulipatam, are decidedly unhealthy localities. The former, after a trial of seventy-seven years, and an expenditure of the enormous sum of sixteen millions eight hundred thousand pounds sterling (including capital and interest), was abandoned as a station for European troops by order of Lord William Bentinck, in 1835. The deaths, on an average taken for thirteen years, amounted to 103 in 1,000 men: so that, if to the cost of the buildings, which were unexceptionable, we add the intrinsic loss resulting from the destruction of life, we should arrive at a result of the most startling and fearful nature. Dr. R. Jackson was the first individual who pointed out to Government, the advantage of locating European troops in the interior and mountainous parts of the tropical islands: and he observes that, "since the adoption of the measure proposed by him of forming can-

* It is to be hoped that the above results as to the unhealthiness of Berhampore, and the enormous loss of life and treasure experienced at that place, may not be forgotten, when, if ever, it should again be proposed as a military station.—Ed.

tonments, on the mountain ranges, the diminution in the rates of sickness and mortality has been such as to justify the assertion, that if this measure had been adopted at the time it was first urged by him, the lives of from 8,000 to 12,000 men would have been saved;"—a sufficient lesson, one would think, to our military authorities, not to *delay* the introduction of improvements, which experienced medical officers concur in urgently recommending.

In the East Indies, the same measure was advocated by Dr. J. R. Martin, and the plan, suggested by him, of calling on military surgeons for notices of the medical topography of the country generally, was adopted, and ordered for the three presidencies in November 1845, by the direct act of the Government.

By a very interesting document lying before us, we learn, that of one of H. M. regiments, which arrived in this country, eight years ago, there are now exactly 109 men left. One-seventh part only are surviving, after a lapse of seven and a half years. At this proportion a regiment would be decimated in a twelvemonth!

We give the details in the form of a Dr. and Cr. account; and only wish that similar returns were published yearly from every regiment:—

H. M. 98th Regiment, January, 1851.

Periods.	Serjeants.	Drummers.	Rank & File.
Strength of regiment on landing in China, July 1842,	37	11	718
Deaths amongst this number, between that period and February 1844,	11	4	417
Strength of regiment on arrival of the Dépôt, February 1844,	32	7	301
Strength of the Dépôt Companies joining service, in 1844,	11	5	630
Number of Recruits and volunteers received between February 1844, and embarkation from Chusan for India, in July 1846,	”	1	258
Strength of regiment on landing at Calcutta, in November 1846,	52	18	689
Recruits and Volunteers received since,	1	0	644
Deaths, and Invalided since November 1846, up to 1st January 1850,	29	7	403
Number of deaths between 17th February and 20th November 1849,	3	1	83
Number of men *now* effective who came out to China with the regiment in July 1842, a period of seven and half years,	7	1	101

Abstract shewing the Increase and Decrease in H. M.'s 98th Regiment.

Increase in 7½ years.	Serjeants.	Drummers.	Rank & File.	Decrease in 7½ years.	Serjeants.	Drummers.	Rank & File.
Strength on landing,	37	11	718	Strength now present,	48	17	858
By joining of Dépôt,	11	5	630	By Death, ...	71	12	1081
Recruits from England, ...	1	1	586	Invaliding,..........	13	3	162
Volunteers, ...	0	0	316				
Total, ...	49	17	2250	Total, ...	132	32	2101
Total Increase, ... 1,550 men.				Total loss by sickness,...1,342			

The number of men, who have taken their discharge, &c., has been purposely omitted from this table, which shows the decrease, by sickness alone, to have been at the rate of 178 men yearly.

Now, this regiment has never enjoyed the advantages of a hill station. Had a certain proportion of the men, selected from amongst the most unhealthy, with due regard to their particular cases, been located for six months at Darjeling, while the regiment was at Dinapore in 1848, or *immediately after* the corps arrived from China, the result would have been very different. But we totally dissent from the plan on which our "*sanataria*" are made use of at present. Instead of sending only the invalids of the season to Darjeling, Mussuri, or Kussowli—dragging the poor creatures, many in a *state of great suffering* and exhaustion, hundreds of miles for the purpose, and locating entire regiments at Dugshae and Subathu—we would earnestly advocate an equal enjoyment of the hill stations by each of the European regiments serving in the Presidency, by letting every corps, cavalry, artillery and infantry, benefit yearly by them, to an equal extent as regards numbers, and for a similar period. Thus, if a detachment of from fifteen to twenty-five per cent. from every European corps were marched to the nearest hill station, so as to arrive in the early part of April, and all those *not requiring* a winter in the hills ordered to rejoin head-quarters again in November or December, there could be no dissatisfaction felt on the point of *interest or favouritism*, and the greatest benefit would result to the greatest number. A seven months' residence in the hills is sufficient for most parties;—many get tired and "*ennuyed*" in half

that time; while, to many, the climate is not only not beneficial, but positively injurious. To the larger bulk of a European regiment, if located in good barracks at an ordinarily healthy station in the Upper Provinces, *a hill climate is by no means necessary.* The men should be selected by the medical and commanding officers of each regiment, with reference to their state of health during the past year, as well as good conduct, and be accompanied by a relative proportion of *their own officers, the detachment* being commanded by a *selected* one. The only objection, that we have heard offered to this plan of letting *all* the European Regiments benefit to an equal degree yearly by our "sanataria," is that the men would suffer in their drill, or fall off in discipline. With a good selected field officer to command the depôt, with a good depôt-staff, and with each regimental detachment commanded by a selected officer, we do not see why there should be any falling off in discipline. The argument, if true, would tell both ways; for, if the men from some very "crack" corps did retrograde in their drill, others would improve. All commanding officers of regiments are not so strict, able and considerate, nor are all regimental systems so good, as that individuals and detachments *might not even gain* by removal for a time, to be placed under different men and different influences. But even admitting that there were temporary deterioration, and that the men returned to their regiments again a little slack in their parade duties, better this, than having to replace them by raw recruits; better that they should appear a little round-shouldered with the ruddiness of health, than be stretched out on hospital cots, and carried about in a dying state in "doolies." Better, far better, to be in the hands of the drill serjeant than the doctor!

On the marking out of a new cantonment in this country, officers are observed spending their entire day in the open air, watching or superintending the erection of their bungalows, staking out their gardens, planting trees, &c., with almost the same indifference to heat and sun, as if they were in England, and in the enjoyment of better health, sounder sleep, and greater appetite, than when living in their residence with all the comforts and luxuries that art can supply to mitigate the "desagremens" of an Indian climate. And, as with the European officer, so it is with the private soldier. The longest marches on record, and under the greatest exposure to heat of weather, have been made by British troops, without any injury to the health. The change of scene, the interest excited by every rumour that finds its way to the camp, the speculation on coming events, all act as powerful stimulants

in counteracting the *otherwise* injurious effects of excessive fatigue and exposure.

And here we think, that Government has not done enough for the European soldier serving in India. In laying out every new cantonment, we would wish to see the "Gymnasium" commenced as soon as the "parade-ground;" the cricket-field ordered as well as the "Conjee-house;" the "soldiers' garden" sanctioned as much as the canteen.

It will be a glory to the Marquis of Dalhousie to establish such a system, and to leave behind him, at every station, the means of innocent recreation and exercise to the soldier, European and native. In one station in the Upper Provinces, viz., Lahore, this has been done through the generous exertions of a single individual—Sir Henry Lawrence. A large space of ground, containing several acres, has been laid out strictly as a "soldier's garden;" there are shady walks, "parterres" of flowers, a cricket-field, swimming bath, Gymnasium, Ball-and Racket-courts, work-shops, skittle-grounds, and a reading-room and library; while the beverage, "that cheers, but not inebriates," is retailed at a very low rate on the grounds, to the exclusion of all spirituous liquors.

This, we believe, is the only instance of the kind in India; but we venture to predict that it will be taken as the model for similar establishments, as soon as the truth becomes apparent, that, in order to preserve our European soldiers in good health, and prevent the slow but certain diseases produced by drink, indolence, and dissipation, we must provide something else beyond the parade ground and canteen.

From a list that has been placed at our disposal, we find that one of H. M.'s cavalry regiments, at present serving in India, is composed as follows. The multitude of trades is very great, and the proportion of labourers to artisans and mechanics is about one-fifth of the whole:—

TRADE.	NO.	TRADE.	NO.
Apothecaries	3	Compositor	1
Appraiser	1	Corrector of the Press	1
Brick-layers	12	Confectioner	1
Button-maker	1	Clerks	41
Brush-makers	3	Coopers	2
Bakers	17	Cabinet-makers	3
Butchers	17	Coal-meter	1
Carpenters	20	Carpet-layers	2
Colour-mixers	2	Carvers and Gilders	3
Chemist	1	Cigar-makers	2
Cotten-spinner	1	Cloth-dresser	1
Curriers	2	Cooks	3

TRADE.	NO.	TRADE.	NO.
Drapers	7	Painters	7
Dyers	2	Paper-makers	2
Edge-Tool-maker	1	Plasterers	4
Engineer	1	Poulterers	2
Engine-Fitter	1	Pewterers	2
Farriers	16	Paper-stainers	2
Flax-Spinner	1	Pocket-Book-Maker	1
Fishermen	2	Rug-maker	1
Founders	3	Rope-maker	1
Farmer	1	Shoeing-Smiths	2
Gas-Fitters	3	Sugar-baker	1
Grooms	27	Spindle-maker	1
Gun-smith	1	Shoe-makers	23
Gardeners	2	Servants	40
Gilt-Toy-maker	1	Sawyers	4
Grocer	1	Smiths	10
Harness-makers	3	Silver-Smiths	4
Hatters	2	Saddlers	8
Hair-dresser	1	Stationer	1
Joiners	4	Tailors	24
Jewellers	3	Tanners	6
Land Surveyors	4	Turners	2
Labourers	126	Tin Plate-worker	1
Leather-dressers	2	Upholsterer	1
Miner	1	Watch-makers	2
Masons	10	Weavers	6
Musicians	2	Wheel wright	1
Maltster	1	Wool-comber	1
Mercer	1		
Mill-Stone-maker	1		646
Optician	1	No previous occupation	8
Porters	3		
Printers	9	Total	654
Plumber	1		

What must have been the amount, paid in premiums and apprentice-fees, by the parents of these 646 artisans? And what would it cost Government to obtain the services of a like body of mechanics for the purpose of completing a railroad in the Upper-Provinces, with all its various requirements of machinery, carriages, station-telegraph, &c.? Why should the benefit of these men's early *education* be lost to the state, as well as to themselves, when we have them on the spot? How much might have been done by the soldiers themselves, during the last two years, at Lahore, Wuzirabad and Peshawur, towards the completion of their own barracks, with positive advantage to all, not only as regards pecuniary emolument, but the much *higher points* of health and life! On board ship, the European private helps to work the

vessel by order of his Commanding Officer, and takes a pull at the "*main brace*" with a hearty good will. On the march he pitches his own tent, or constructs a raft for crossing streams, without being considered to suffer either in character or discipline. It is only in cantonment that he is taught to be a mere marching machine—a parade automaton. Some of the men, in the regiment alluded to, it is true, do obtain an addition to their pay by working at their original trades, between the hours of parade and roll-call: and the money, thus gained by their own manual labour, is more likely to be accumulated towards purchasing their discharge, or deposited in a Savings' Bank, than any surplus derivable from their pay, or "dry batta," which, by a recent excellent order of Government, is allowed to be disbursed daily at the "grog-tub," to all who prefer receiving money to rum.

The expense, however, of each individual's providing his own tools is a serious impediment to the men working at their old trades. This difficulty would be removed, if the officers of each corps would establish and encourage regimental work-shops, where, by the division of labour, much larger profits would be accumulated, and the expense of materials and implements could be defrayed by a per centage on the price received for the manufacture.

Half-a-dozen good coachmakers and wheelwrights, who might be found in most European regiments, ought to be able, in a few weeks, to build a buggy that would realize some five or six hundred rupees, if well finished and substantially put together. So with boat-building, cabinet-making, engraving, painting, book-binding, and many other trades—the men would find a ready market for the manufactured articles, especially in the Upper Provinces, where the residents of a station are cut off from the advantages derived by living near Calcutta, Delhi, or Agra.

Where it is impossible to provide out-of-doors employment and recreation, all the year round, from the want of proper shelter, afforded by trees, or by the shady side of a high wall or building, it would at least be practicable during the cold season, from October to March, at all stations. We cannot see why European soldiers might not spend their leisure time in (for instance) laying out a public garden, with carriage drives *round*, but not *through*, it;—a work, which would be a lasting benefit to the station, and might be well pointed out to succeeding corps, to serve as a stimulus for further industry and enterprise, in improving upon the original plan. We would, however, go even further than this. We think that, if a Railroad were in the course of being constructed within a reasonable distance of any of our large milita-

ry stations, at which European soldiers are located, a very large number of volunteers would be found in every regiment, who would feel it a privilege to be allowed to shoulder a pickaxe or spade, and assist in throwing up the embankments of a great national undertaking, that may, in after years, be a far more glorious military monument of what had been achieved by the British soldier in India, than all that has been engraved on marble urn, or mural tablet. A horde of Goths and barbarians may invade and *conquer* a country, but it is only a civilized nation that can *improve* it; and the first great step is the opening out of its resources, and making communication perfect, by means of roads, canals, and navigable rivers.

But, until these truths can be impressed upon the minds of those, who have the power and authority to act in remodelling our present defective system of maintaining a gigantic peace-army in idleness and sloth, we must be content to be looked upon as visionaries, and to hear our plan ridiculed as Utopian and impossible. Without the co-operation of the officers of a regiment, we well know that we are undertaking the labour of Sisyphus: and that any scheme—whether for the improvement of the men, or the education of their children—whether it be to procure health or recreation—to establish a "soldier's garden" or regimental work-shops—will necessarily fall to the ground, if the commandant and his officers take no interest in the matter. It cannot be expected that the men will take the initiative, if ridicule and satire from their superiors are to be brought to bear against them. The French have long set us an example in this matter well worthy of imitation: and Napoleon's opinion of the value of his corps of Pioneers and Sappers was never lessened, or detracted from, by any of the most brilliant deeds of "the old guard."

We are fully aware that there would be an outcry raised, at first, on the bare mention of European soldiers working in a tropical climate. There would be a cry of "*coolies*," "*slaves*," "*convicts*:" but the outcry would come from those, who have either paid the subject of the "mortality of our troops in India," no attention, or who, from ignorance and prejudice, look upon the very idea of change or improvement, as embodying something revolutionary and destructive. To such we would beg to quote the words of one, whose writings will probably outlive those of most of his *co-temporaries*, and whose energy and perseverance enabled him to overcome all opposition, because his heart was in the work. Dr. *Arnold says*:—

"There is nothing so revolutionary, because there is nothing so un-

natural and so convulsive to society, as the strain to keep things *fixed*, when all the world is, by the very law of its creation, in eternal *progress*; and the cause of all the evils in the world may be traced to that natural, but most deadly error of human indolence and corruption—that our business is to *preserve*, and not to *improve*. It is the ruin of us all alike, individuals, schools, and nations."

From the returns of six of H. M. regiments, serving in the same presidency, who have arrived in this country within the last eight years, we find that the average of mortality amongst the officers is one in every regiment yearly, and the average number arriving with each regiment was 37⅔. Taking the aggregate of the whole number in the six regiments, viz., 226, this gives less than three per cent. as the yearly ratio of deaths amongst European officers, which tallies exactly with the number we before quoted from Dr. Hutchinson's tables "of 29 in 1,000 for all tropical stations, where British troops are stationed."

We might extend the subject much further, and furnish melancholy details of the mortality amongst the children of our European soldiery. The same causes, viz., impure air, bad water, improper food, confinement to the barrack, want of amusement or employment, tell with tenfold power upon the offspring, whether born, under such adverse circumstances, of sickly parents, or experiencing such a change in their habits and mode of life, on arriving in this country.

Taking the returns of two regiments, that reached India last year, we find, that in one there have been born 41 children, of whom, at the end of the fifteenth month, there are only 29 surviving, shewing a loss of 27 per cent. within the *first year*.

In another regiment, 52 children have been born within fourteen months, of whom 32 have died in the same period, giving a ratio of mortality equal to 33 per cent. during the first twelvemonth of their life in India.

In another case, taking the children born in England or on board ship, who arrived with the regiment in India, eight years ago, out of 159 (the original number) no less than 112 have perished. Of the remaining 47, how few, in all probability, will grow to manhood! Hence we see that, whether we take 100 children imported from England, born of healthy parents, or 100 children born of the same parties within the first year of their arrival in India, still the melancholy result is the same—proving, beyond all doubt or question, the system of barrack-life amongst our European soldiery in this country to be totally unfavorable to colonization

This will be seen still more clearly by the following table, shewing the respective ages of the survivors of 261 children born in one regiment, since landing in India 8 years ago:—

From	7	to	8	Years of age.	4	113 Surviving.
„	6	to	7	„ „	8	
„	5	to	6	„ „	13	
„	4	to	5	„ „	15	
„	3	to	4	„ „	20	
„	2	to	3	„ „	15	
Under	2			„ „	38	
Died,					148	
Total in eight years,					261 Births.	

Appendix, No. XII.

LIST OF PUBLICATIONS DESCRIPTIVE OF THE NEILGHERRIES.

1.—The first pen that called the serious attention of the Indian community to the value of the Neilgherry Hills, was that of the Revd. James Hough of Madras in "Letters on the Climate, Inhabitants, Productions, &c. of the Neilgherries or Blue Mountains of Coimbatore," addressed to the Editor of "The Calcutta Hurkaru" newspaper, between July and November 1826, and subsequently published, in a collected form, in 1829, by Hatchard and Son, London.

2.—In 1827, Dr. Young, of the Madras Establishment, presented to the Medical and Physical Society of Calcutta a paper on "The General and Medical Topography of the Neilgherries," which is published in Vol. 4 of their Transactions, and is a most interesting account.

3.—In 1832, Capt. Henry Harkness, of the Madras army, published "A Description of (the Todas) a singular aboriginal race inhabiting the summit of the Neilgherry Hills or Blue Mountains of Coimbatore," through Smith, Elder and Co., London.

4.—In 1834, Capt. Mignon of the Bombay European Regiment, published a little Volume entitled "Notes extracted from a private Journal written during a tour through Malabar, and among the Neilgherries," printed at the American Mission Press, Bombay.

5.—In the same year, Lieut. H. Jervis, H. M. 62nd. Regiment, published a "Narrative of a Journey to the Falls of the Cavery, with an Historical and descriptive account of the Neilgherries;" through Smith, Elder and Co., London.

6.—In the same year, also, appeared the first edition of Dr. Baikie's account of the Hills, printed at the Baptist Mission Press, Calcutta.

7.—In 1835, Dr. P. M. Benza, Surgeon to the then Governor of Madras, published a "Geological sketch of the Neilgherries," which will be found in Vol. 4 of the Journal of the Asiatic Society of Bengal.

8.—In 1838, Dr. DeBurgh Birch, of the Madras Service, laid before Government "A Topographical Report on the Neilgherries," published in the Madras Journal of Literature and Science, Vol. VIII.

9.—In 1844, Capt. H. Congreve, of the Madras Artillery, addressed to "The Madras Spectator" letters on the Hills, containing a very elaborate speculation as to the origin of the "Todas," insisting on their being the remnants of the Celto-scythian race, treating the subject with remarkable acuteness, and displaying much curious antiquarian lore: the amount of observation on that and other interesting subjects, is such, as to lead us to regret that the talented author has left his labours to the precarious existence of the columns of a newspaper.

10.—In the same year, was published, by order of the Madras Government, printed by R. W. Thorpe, at the Vepery Mission Press, a valuable "Report, on the Medical Topography and Statistics of the Neilgherry Hills, with notices of the Geology, Botany, climate, and population, Tables of Diseases, amongst Officers, Ladies, children, &c." compiled from the Records of the Medical Board Office.

11.—In 1847, Capt. J. Ouchterlony, of the Madras Engineer corps, submitted to Government a most elaborate "Geographical and statistical Memoir of a survey of the Neilgherry mountains." This is the most comprehensive account of the Hills, their geological character, productions, agriculture, climate, inhabitants, and the approaches to the hills that has been published. It will be found in the "Madras Journal of Literature and Science" No. 34, Vol. XV. 1848.*

The labor bestowed, the research displayed by Capt. Ouchterlony, and the amount of information conveyed by him in this admirable report, with the splendid Map of the Neilgherries constructed by him, must always command the attention of visitors; and it well deserves a place in their libraries, and merits careful perusal, and reference to as a directory on all subjects connected with the Hills, whether by occasional visitors, or intending settlers. Capt. Ouchterlony submitted with his Map a further report to Government which the Editor has not been able to procure.

12.—In 1851, Lieut. Burton, of the Bombay army, published a most interesting work, entitled "Goa and the Blue Mountains," through Bentley, London.

13.—In the same year, a brochure of the Hills was published by the late talented Capt. Sir Francis Ford, of the Bombay army, entitled

* A Copy of this Memoir has been presented by the Editor to the Ootacamund Library for the use of visitors.

"Neilgherry Letters." It is a clever, lively and amusing narrative, and was published at the "Telegraph and Courier" Press, Bombay.

14.—There is also a brochure by I. D. P. Packman, Esq. late Senior Medical Officer on the Hills, entitled "Companion to the Blue Mountains," which is a very useful guide in a condensed form; published by Pharoah and Co., Madras.

Several reports, and notices of particular subjects connected with the Hills, have been, from time to time, published in the different Literary Journals, and Transactions of Literary Societies: amongst them appear.

A valuable paper by the Rev. Mr. Schmid upon "the Botany of the Hills and the language of their Inhabitants," and

"Notices of the Trees, Plants, and Ornithology" of that interesting region, by T. C. Jerdon, Esq. of the Madras Medical Establishment.

In conclusion, "The Madras Christain Herald," in No. 31. Vol. XIV. under date the 30th July, 1856, and subsequent Numbers, gives a series of articles entitled "the Tribes inhabiting the Neilgherry Hills: their social customs, and Religious Rites," from the rough notes of a Missionary.

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